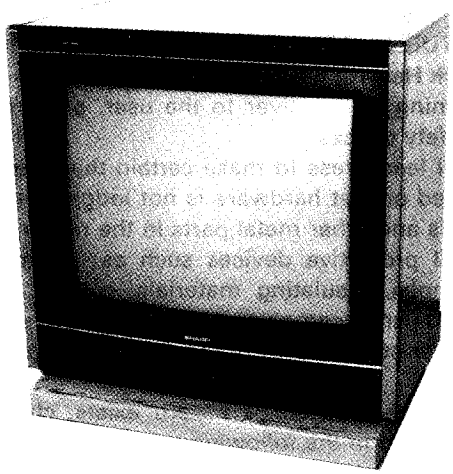
SHARP SERVICE MANUAL

S56W535LD956/



COLOR TELEVISION
SIGMA 9100 CHASSIS

Chassis No. 35L1

MODEL 35LD956

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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SHARP ELECTRONICS CORPORATION

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IMPORTANT SERVICE SAFETY PRECAUTION

■ Service work should be performed only by qualified service technicians who are thoroughly familiar with all of the following safety checks and servicing guidelines.

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect the AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. This receiver is of isolation type: but it is noted that some parts of the power supply circuit are hot. To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10 k ohm Resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential sources of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-ray radiations if the high voltage is as specified in the "High Voltage Check" instructions. It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter. The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value — no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and, also, under certain conditions, may produce radiation in excess of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver. Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

BEFORE RETURNING THE RECEIVER (Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

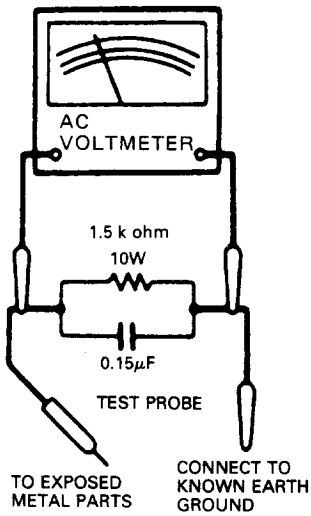
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC line cord directly into a 120 volt AC outlet
  (Do not use an isolation transformer for this test).
- Using to clip leads, connect a 1.5 k ohm, 10 watt resistor paralleled by a 0.15μF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.

  All check must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)

  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above are indicative of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.

IMPORTANT SERVICE SAFETY PRECAUTION (Continued)



SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams. For continued protection, replacement parts must be identical to those used in the original circuit. The use of a substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

ELECTRICAL SPECIFICATIONS

VHF ANTENNA INPUT IMPEDANCE	75 ohm unbalanced
UHF ANTENNA INPUT IMPEDANCE	300 ohm balanced
CONVERGENCE	Magnetic
FOCUS	Hi-Bi-Potential Electrostatic
AUDIO POWER OUTPUT RATING	7 Watt (at 5 % distortion)
INTERMEDIATE FREQUENCIES	
Picture IF Carrier Frequency	45.75 MHz
Sound IF Carrier Frequency	41.25 MHz
Color Sub-Carrier Frequency	42.17 MHz (Nominal)
PICTURE SIZE	602.9 sq. in.
POWER INPUT	120 volts AC 60Hz
POWER RATING	154 watts (AVG), 2.4A (Max.)
SPEAKER SIZE	5¼" P.M., 1.71 oz. Magnet, × 2 pcs.
VOICE COIL IMPEDANCE	8 ohm at 400 Hz
SWEEP DEFLECTION	Magnetic
TUNING RANGES	VHF-Channels 2 thru 13 UHF-Channels 14 thru 83 CATV Channels 1 thru 65, 95 thru 99 (EIA, Channel Plan)

INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdriver or TV alignment tools.
(2) Before performing adjustment, TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The entire receiver is protected by a 4.0A fuse (F701), mounted on PWB-D, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, or +B system, the X-Radiation protector circuit must be tested for proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Connect the TP681 with TP683 through a short clip lead. When these points are connected, the operation of horizontal oscillator stops.
4. To start operation, remove the short clip lead and touch the TP682 to TP683.
   (Remove short clip lead as soon as the set operates again with a normal picture.)
5. If the operation of the horizontal osc. does not stop in step 4, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter to the CRT anode.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with strong air signal or a properly tuned test signal.
3. Set SW1801 on PWB-A to "ON" position.
   Note that loss of luminance will occur.
4. Rotate Screen control (on T603) to minimum (CCW) end of its rotation.
5. The reading should be approximately 31.5kV at zero beam.

If a correct reading cannot be obtained, check circuitry for malfunctioning components. Upon completion of voltage check, set SW1801 to "ON" position and readjust Screen control for proper operation as detailed in BLACK AND WHITE TRACKING procedure.

INSTALLATION AND SERVICE INSTRUCTIONS (Continued)

Field Adjustment

RF. AGC. Adjustment

(1) Select a local channel.
(2) AFT switch "off" position.
(3) Turn RF AGC control (R210) fully clockwise until snow and/or noise appear in picture, then slowly turn control counter-clockwise until snow and/or noise disappear.
(4) Check all other channels.
(5) AFT switch "on" position.

Initial Volume Adjustment

(1) Select a local channel.
(2) Continuously push volume "down" control for about 10 seconds.
(3) Turn volume setting control (R1812) on PWB-C until a barely audible sound is heard.

Horizontal Hold Adjustment

(1) Select a local channel.
(2) Adjust horizontal hold control (R608) to stabilize picture.
(3) Check all channels for stabilized picture and sound.

Channel and Volume Display Position Adjustment

(1) Operate channel and volume call buttons on remote control transmitter for a normal display.
(2) Adjust sign position control (L1402) on PWB-C in shield case so that (the channel and volume display is screened without lacking on the picture screen.)

Vertical Size and Linearity Adjustment

(1) Select a local channel.
(2) Check vertical hold, brightness and controls for a normal picture.
(3) Adjust vertical size control (R4104) for approximately one-half inch over-scan at top and bottom of picture screen, and linearity control (R501) for the best vertical linearity.

Horizontal and Vertical Position Adjustment

1. Select a local channel.
2. Adjust the horizontal position switch (S601) and vertical position switch (S501) so that the picture comes to the screen's center.

Sub Picture Control

1. Select a local channel.
2. Bright control (R4108) and Picture control (R4112) fully clockwise.
3. Turn sub-picture control (R4111) for normal picture.

Audio Mute Adjustment (R1206)

(1) Select a local channel and adjust volume to an audible sound.
(2) Select any channel with no signal (noise appear).
(3) Turn mute control (SD ADJ:R1206) on PWB-C until noise disappear.
(4) Check a sound for local station in heard.

Sub-Bright Control

(1) Select a local channel.
(2) Turn picture control (R4112) fully clockwise and set brightness control (R4108) to center position.
(3) Turn sub-bright control (R4107) for normal brightness.

Focus Adjustment

(1) Select a local channel.
(2) Set brightness and picture control to a normal viewing level.
(3) Adjust focus control (part of T603) for sharp scanning lines and/or sharp picture.

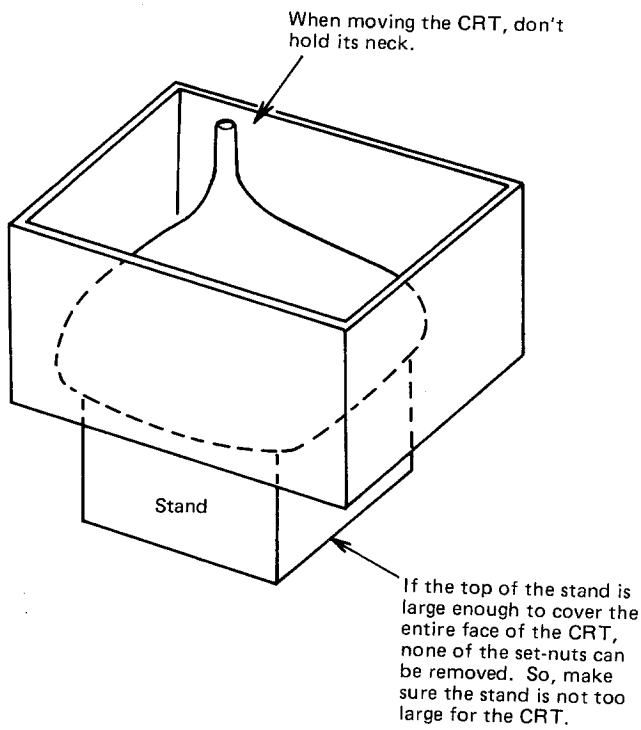
NOTE:
1. All field adjustments mentioned can be performed without test equipment.
2. The AFT switch is employed for the following purpose. When connecting a VCR or video game equipment to the entenna terminals of this TV and when the RF output frequency of these video equipments deviates from the normal TV channel frequency this frequency divition can be corrected by setting the AFT switch to the "on" position. Usually the AFT switch should be set the "on" position.
3. After servicing the set, check that the aging switch is set at "off" position. This aging switch is to be used only for the factory inspection; at "on" position, it won't allow the set to be turned off.
4. Please note polarity of speaker terminals when connecting its leads.

Connector leads	Speaker position (from view)	Terminal polarity
EL1 EL2	left	+ –
EL3 EL4	right	– +

Servicing the CRT

- **Removing the CRT**

1. Remove the chassis and all of the front frame panels from the cabinet.
2. Prepare a wooden stand or the like to put the CRT on.
3. Place the CRT with its front facing downward as shown in the figure below. (This work needs two or four persons.)
4. Remove the set-nuts from the CRT and then detach the cabinet from the CRT.


When moving the CRT, don't hold its neck.
Stand
If the top of the stand is large enough to cover the entire face of the CRT, none of the set-nuts can be removed. So, make sure the stand is not too large for the CRT.

- **Remounting the CRT**

(Use the reverse procedure of removing.)

1. Connect the coating ground wire to the CRT.
2. Set the cabinet on the CRT and secure the CRT with the set-nuts.
3. Raise the cabinet and replace the chassis and the front frame panels.

- **Purity adjustment**

1. Place the TV set with its front to the east (or to the west).
2. Set the earth magnetism compensation switch to the OFF position.
3. The adjustment method is the same as the conventional one.

Notes

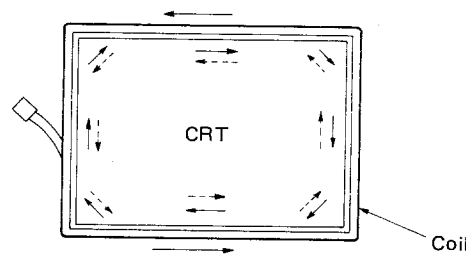
Before making this adjustment, demagnetize the front and outer shield of the CRT and the CRT mounting bracket by using an external demagnetizer. Also, age the TV set for more than one hour.

4. Install the TV set and then demagnetize it.
5. Check the direction of the picture and change over the earth magnetism compensation switch to the specified direction.

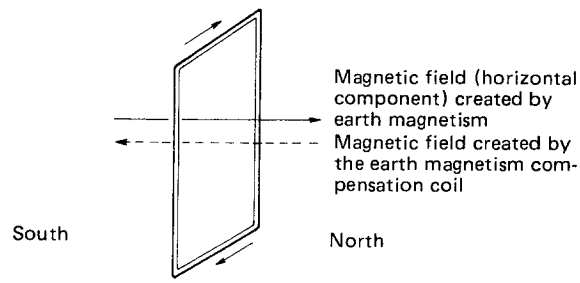
- **Earth magnetism compensation circuit**

Using a 35-inch large-screen CRT, this TV set is liable to be greatly affected by earth magnetism. So, its color purity deteriorates depending upon the direction of its installation. In order to nullify the external influence of earth magnetism, this TV set is internally equipped with the earth magnetism compensation circuit that is capable of killing earth magnetism.

Operating Principle



Direction of d.c. current flow (Direction of current flow in the coil)


Magnetic field (horizontal component) created by earth magnetism
Magnetic field created by the earth magnetism compensation coil
South
North

Example) When the TV set looks toward the south:

◄------ Movement of the picture caused by the earth magnetism compensation coil

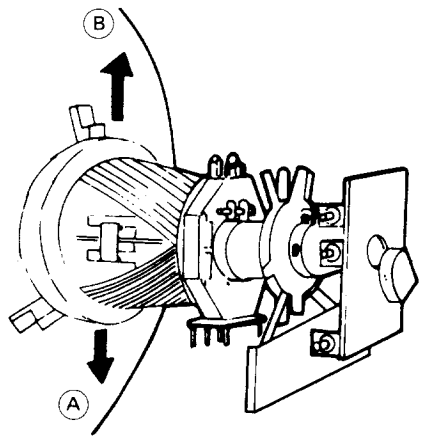
——► Movement of the picture caused by earth magnetism

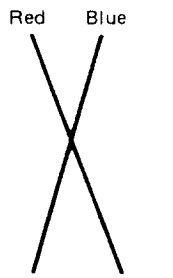
Note: When the TV set looks toward the north, the picture exhibits the reverse movement.

CONVERGENCE ADJUSTMENT

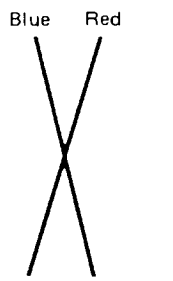
1. Vertical center
   Adjust the purity magnet so that the center of cross-hatch pattern comes to the center of CRT.
2. Static convergence adjustment
   This adjustment is performed in the same way as usual by using the convergence magnet.
3. Dynamic convergence adjustment
   This adjustment is performed by moving the deflection coil in up and down direction. For the adjustment in the conventional models, the deflection coil is moved in right to left direction so that a misalignment (Xv) of the red and blue of the horizontal rasters at the vertical center will be eliminated.
   In this mode, however, the deflection coil is moved in up and down direction so that the misalignment (Y_H) of the vertical rasters at the horizontal center will be eliminated. This is due to such design change that the winding of the new deflection coil is more convexed (at its input side) than the conventional one.

	Y_H (Amount of vertical raster misconvergence)	Xv (Amount of horizontal raster misconvergence)
New deflection coil	2	1





Move the deflection coil downward.
Figure (A)



Move the deflection coil upward.
Figure (B)

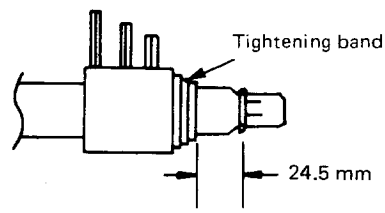
Cautions:

If the vertical center of raster is too apart from the screen's center, the dynamic convergence may not be possible only by moving the deflection coil vertically.
In this case, follow the procedures below.

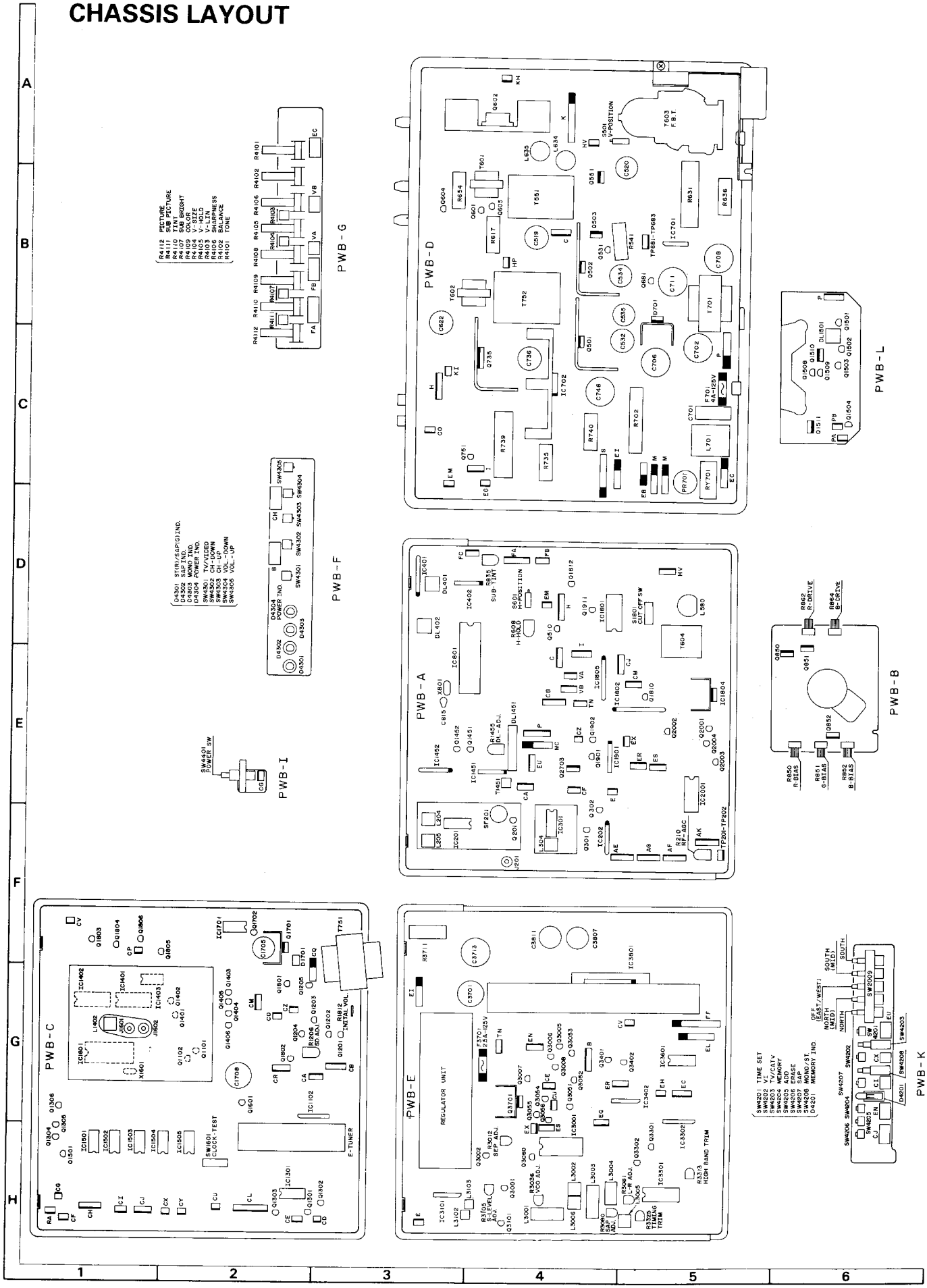
1. When the deflection coil is moved downward, the phenomenon as shown in Fig. (A) still remains, raise the vertical center of raster slightly.
2. When the deflection coil is moved upward, the phenomenon as shown in Fig. (B) still remains, lower the vertical center of raster slightly. The fact that the vertical center of raster is too apart from the screen's center will also cause unbalance between the upper half green and lower half green on the screen.
3. If the raster's center is above the screen's center, the upper half green is collapsed inward while the lower half one is proper.
4. If the raster's center is below the screen's center, the lower half green is collapsed inward while the upper half one is proper.
5. For the dynamic convergence adjustment, if it is needed to move the deflection coil in right to left direction, take the same procedures as usual so that the red and blue of the horizontal rasters (Yv) are converged together.

	Amount of horizontal raster misconvergence	Amount of vertical raster misconvergence
Deflection coil with need of pincushion correction	1	4

- Positioning of Purity Magnet
  The purity magnet also works as a fine speed control coil, and when positioning it, observe the following dimensions.

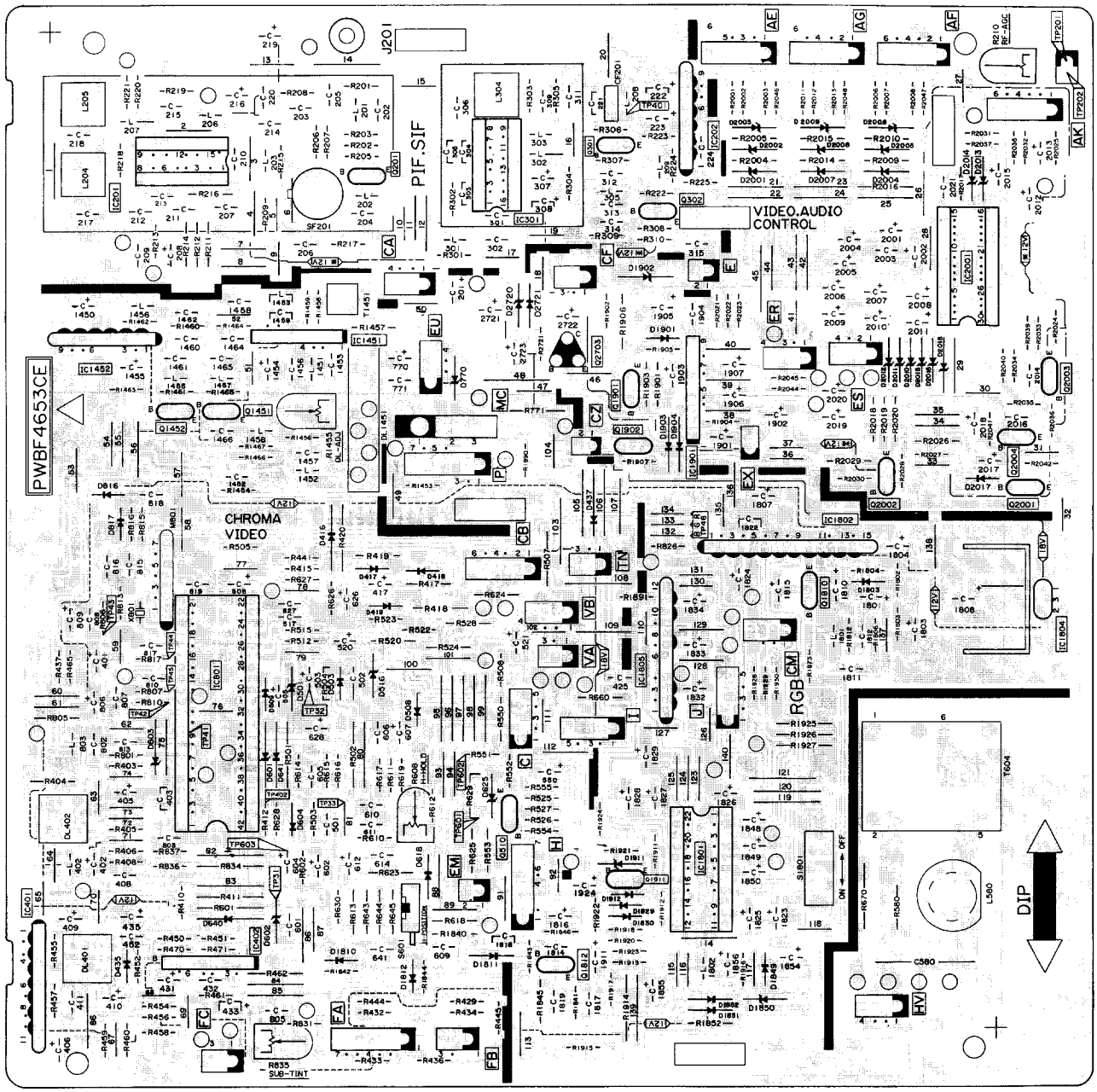


CHASSIS LAYOUT

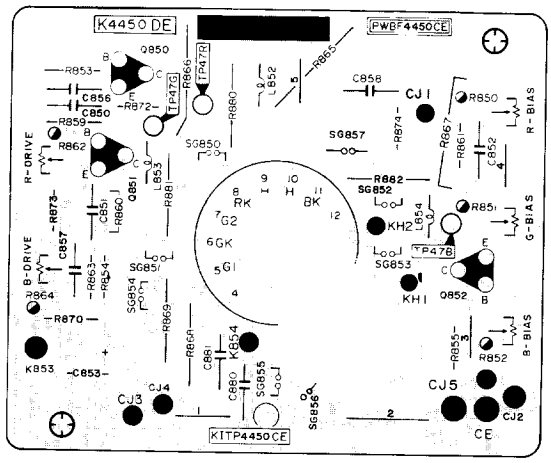


PRINTED WIRING BOARD ASSEMBLIES

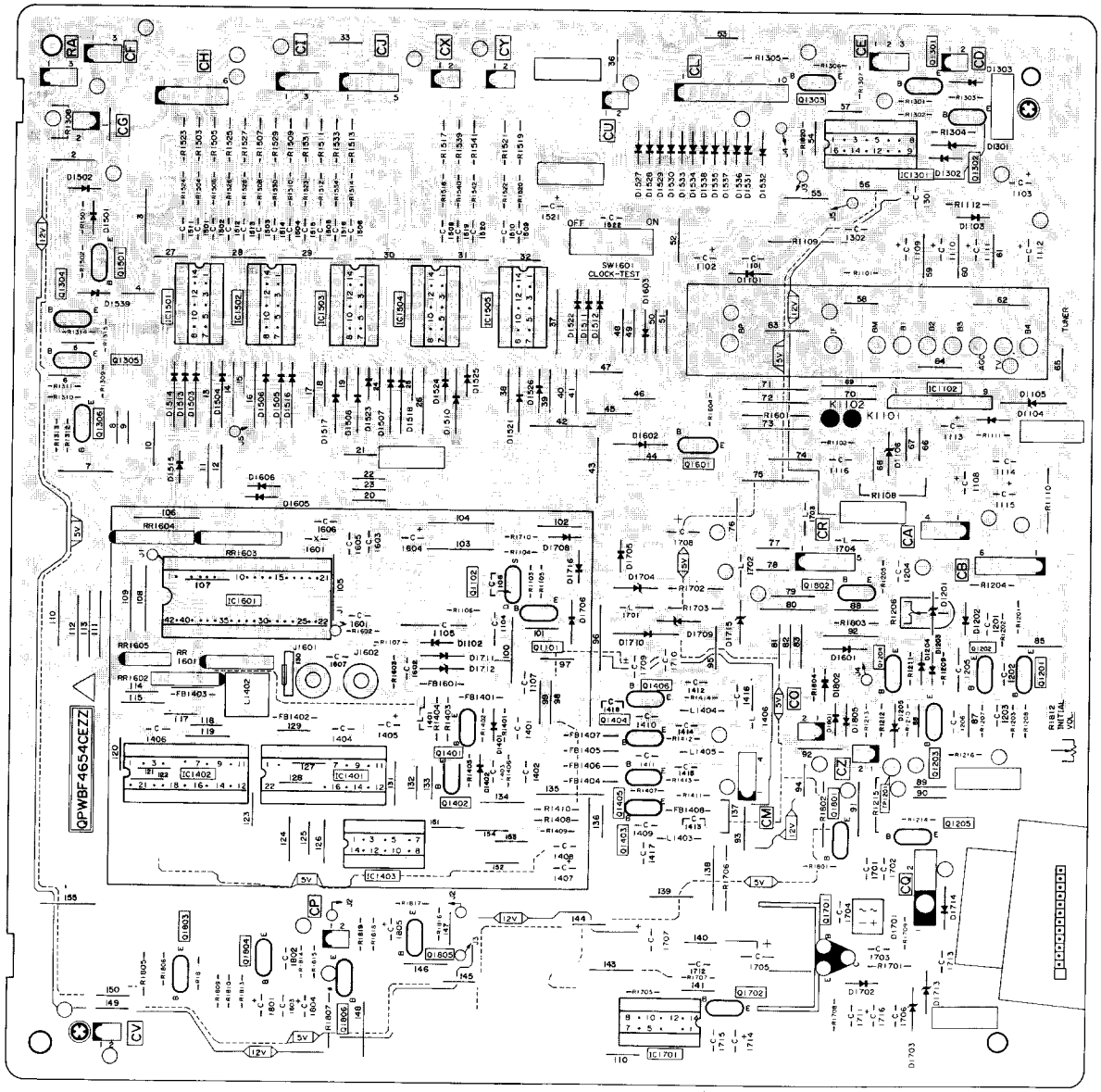
(All the PWBs here are shown as viewed from their wiring sides.)



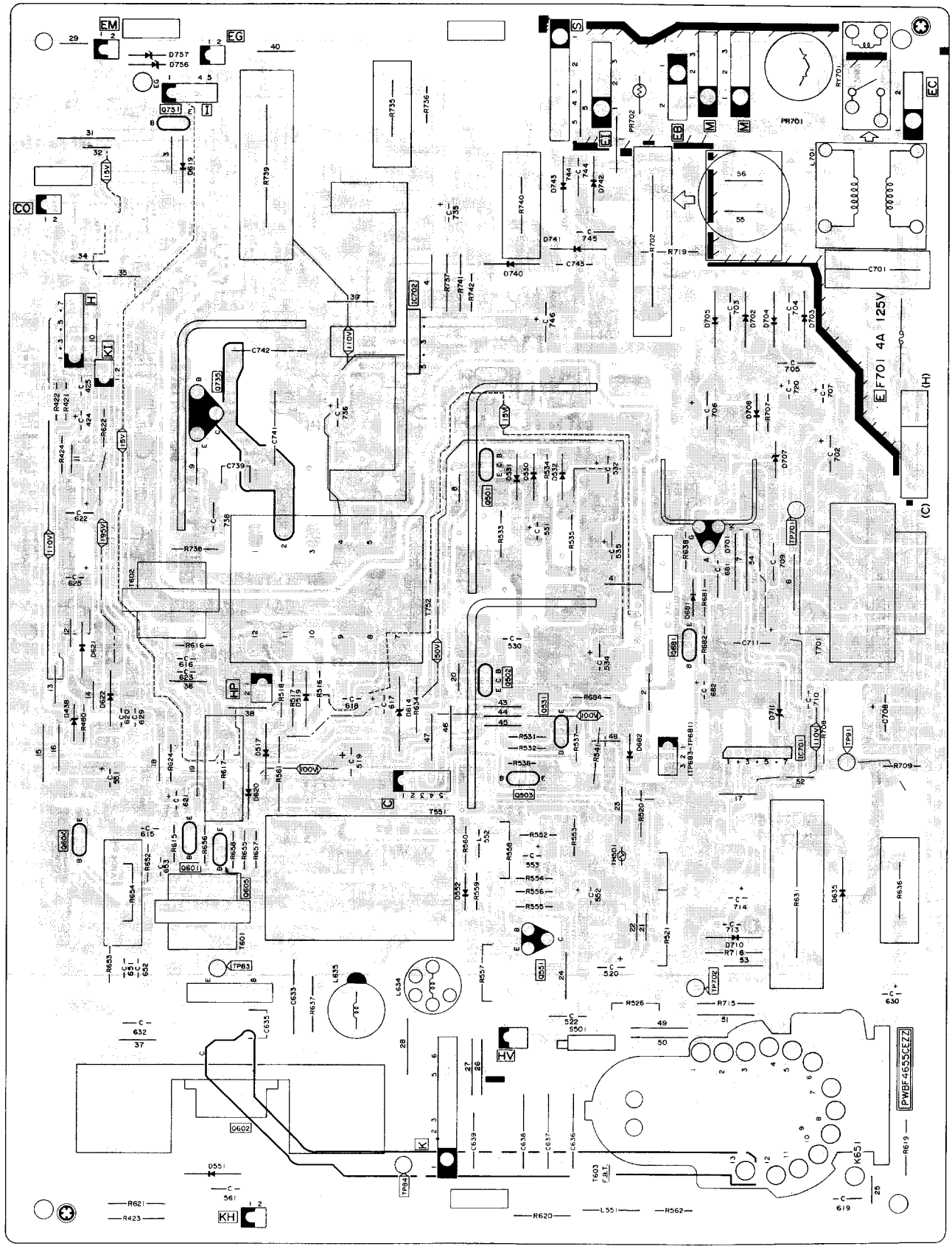
PWB-A



PWB-B



PWB-C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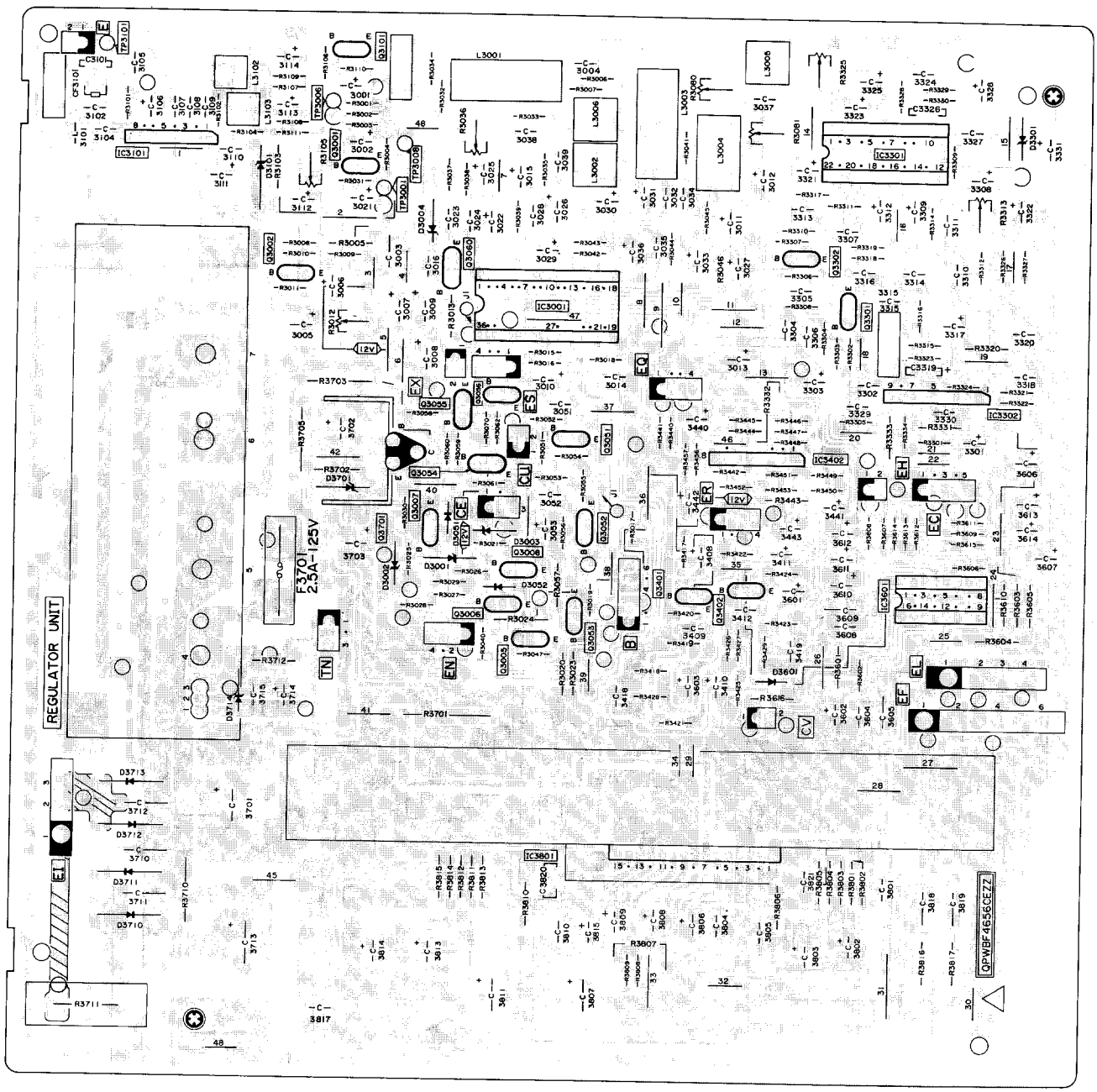
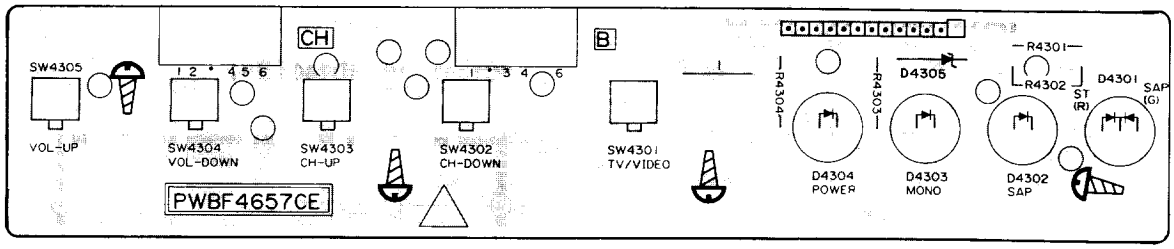
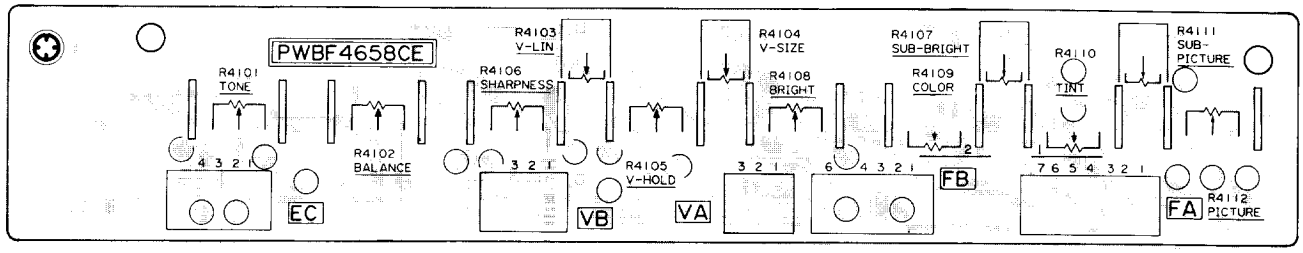


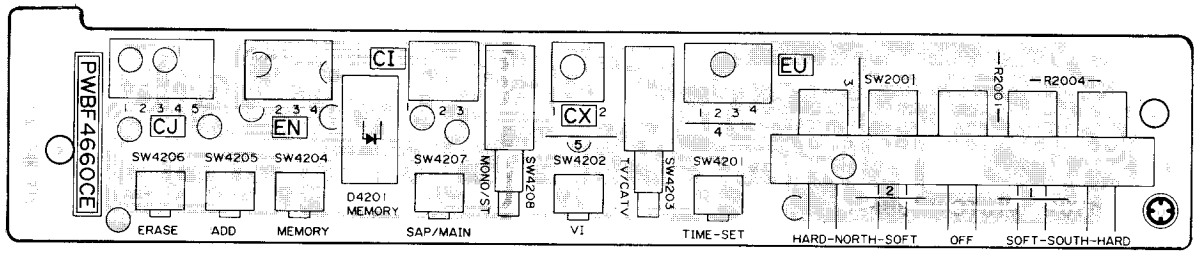
PWB-E



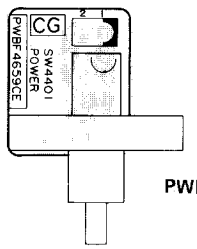
PWB-F



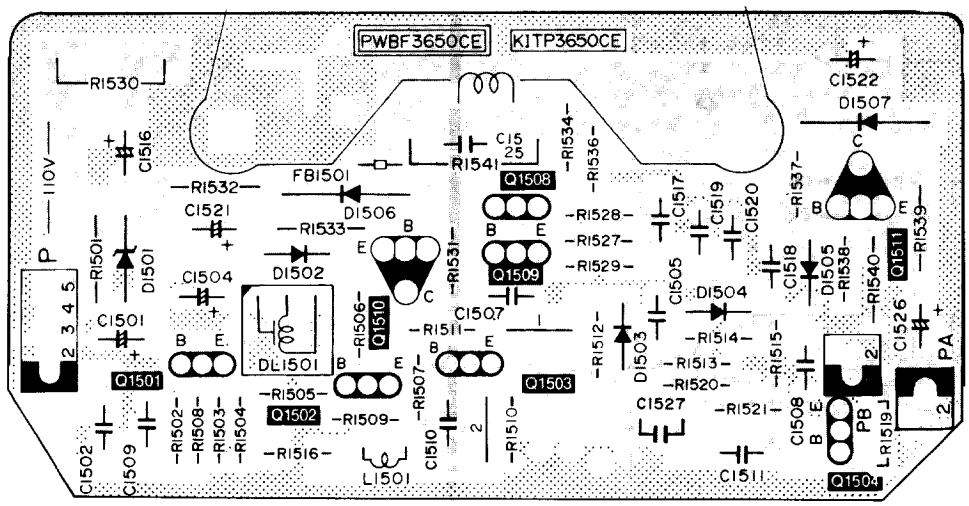
PWB-G



PWB-K



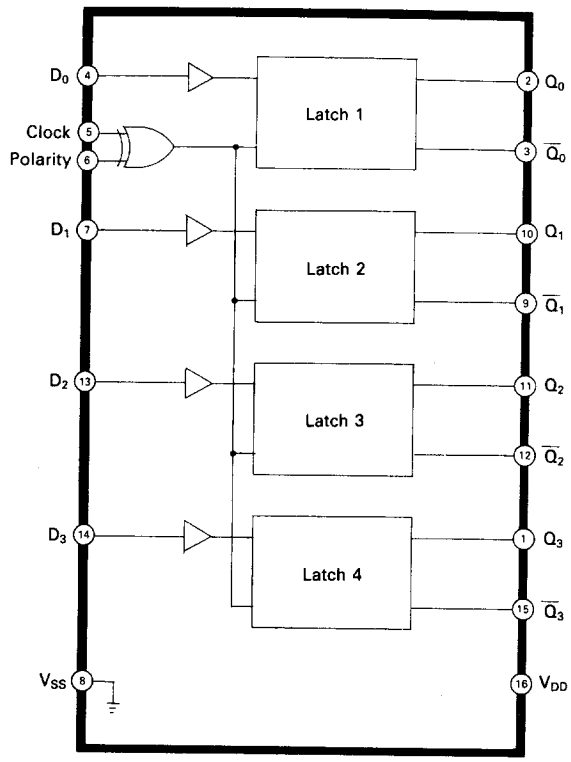
PWB-I



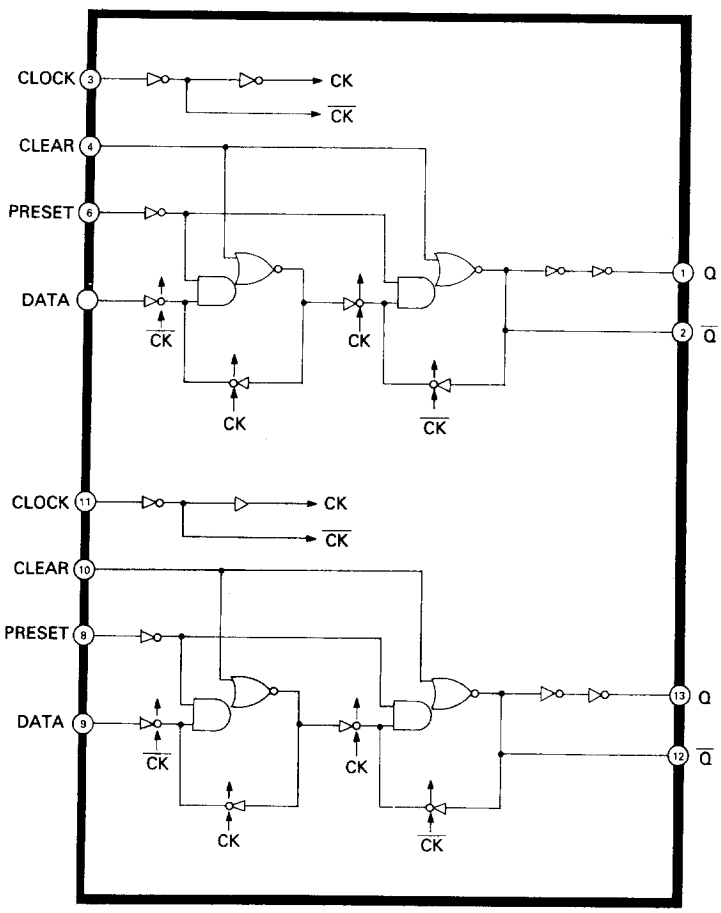
PWB-L

BLOCK DIAGRAM OF IC'S

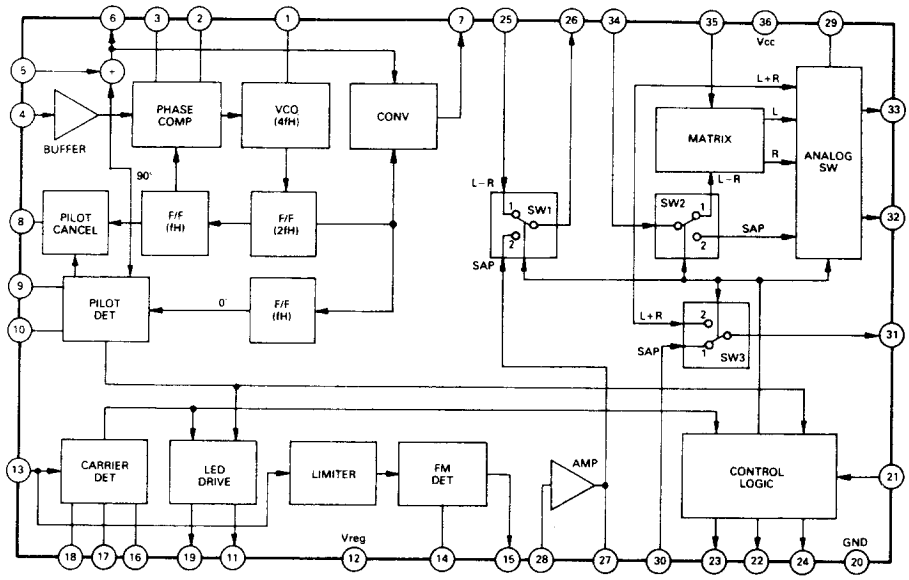
IC1301 VHiHD14042P-1



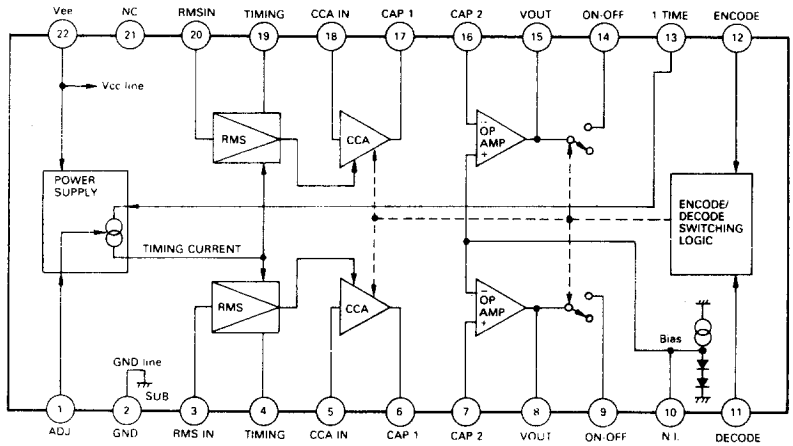
IC1701 VHiTC4013BP-1



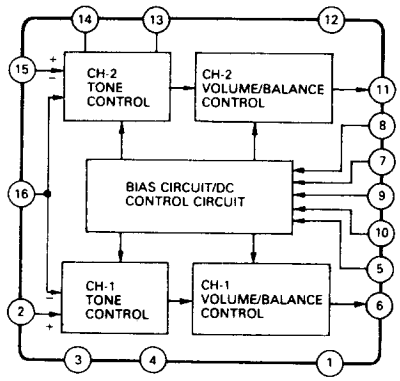
IC3001 RH-iX0633CEZZ



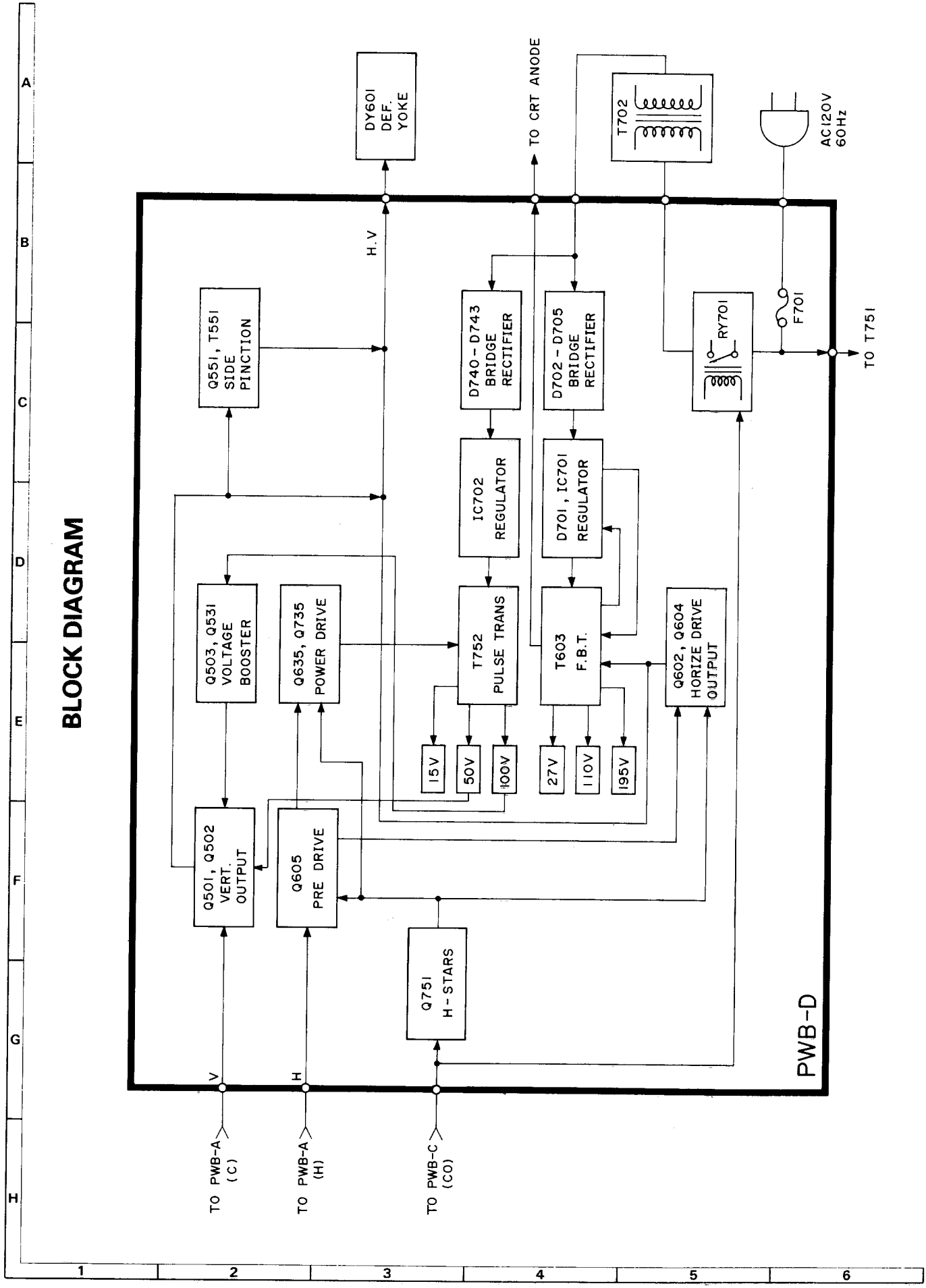
IC3301 VHiAN6291//-1

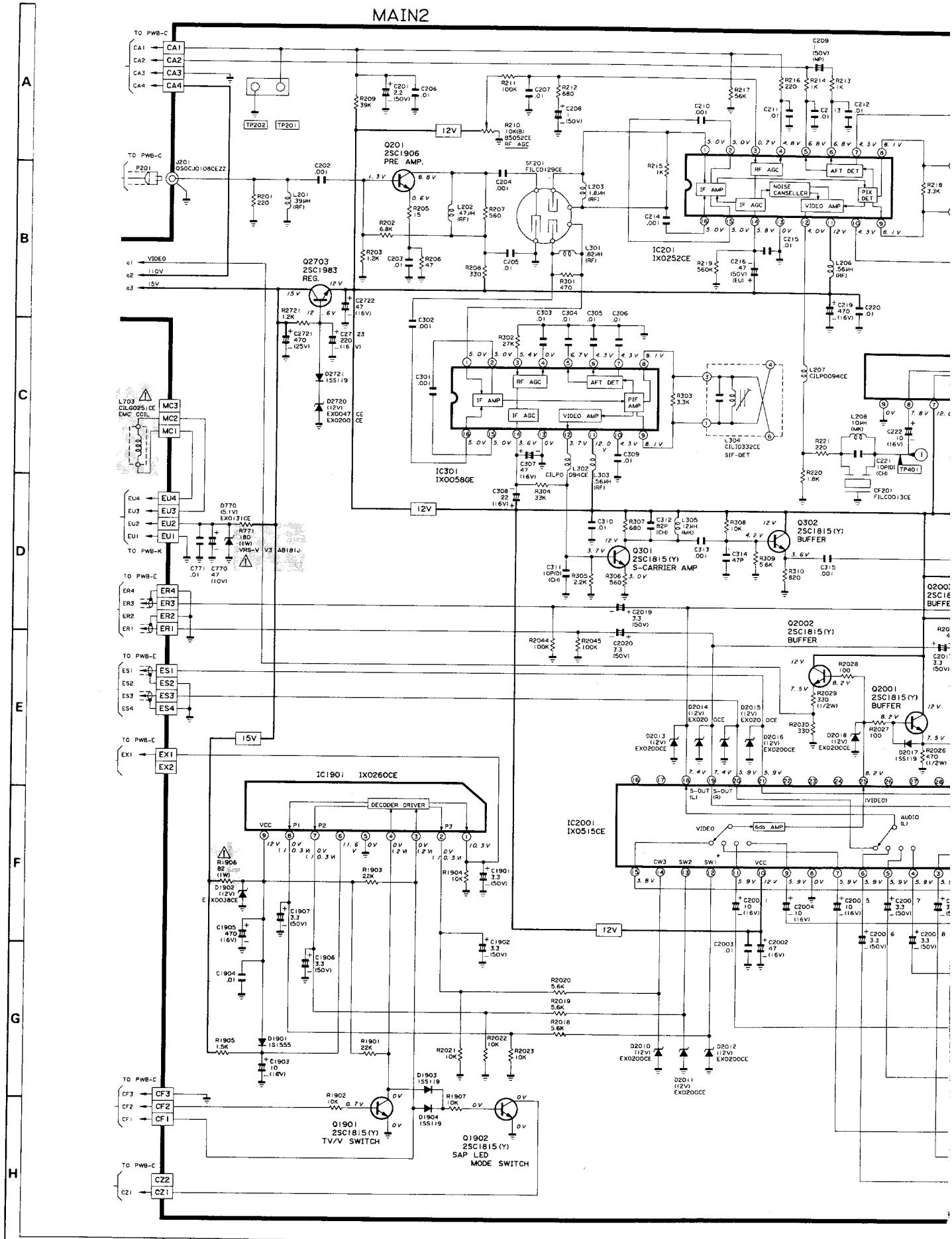


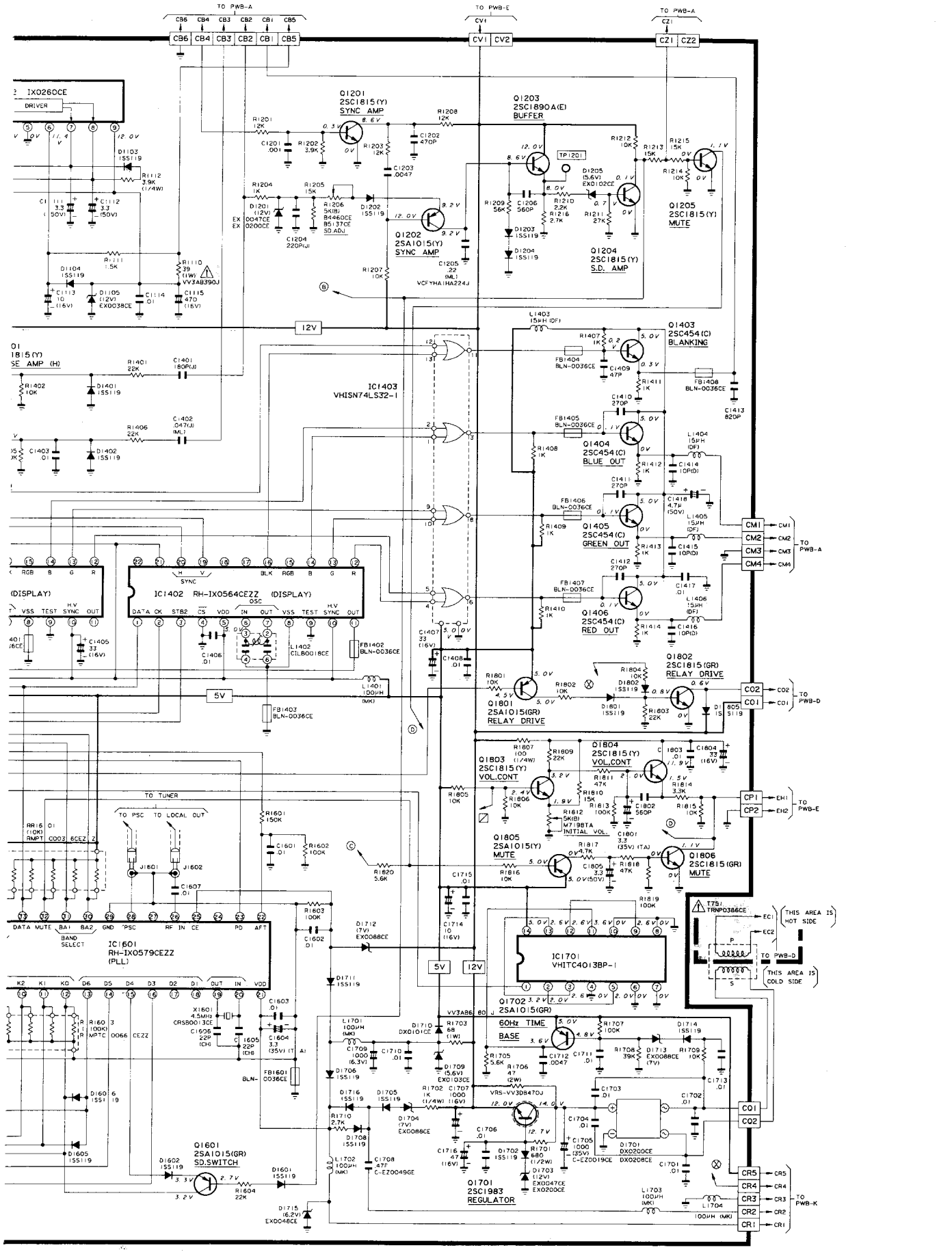
IC3601 RH-iX0214CEZZ

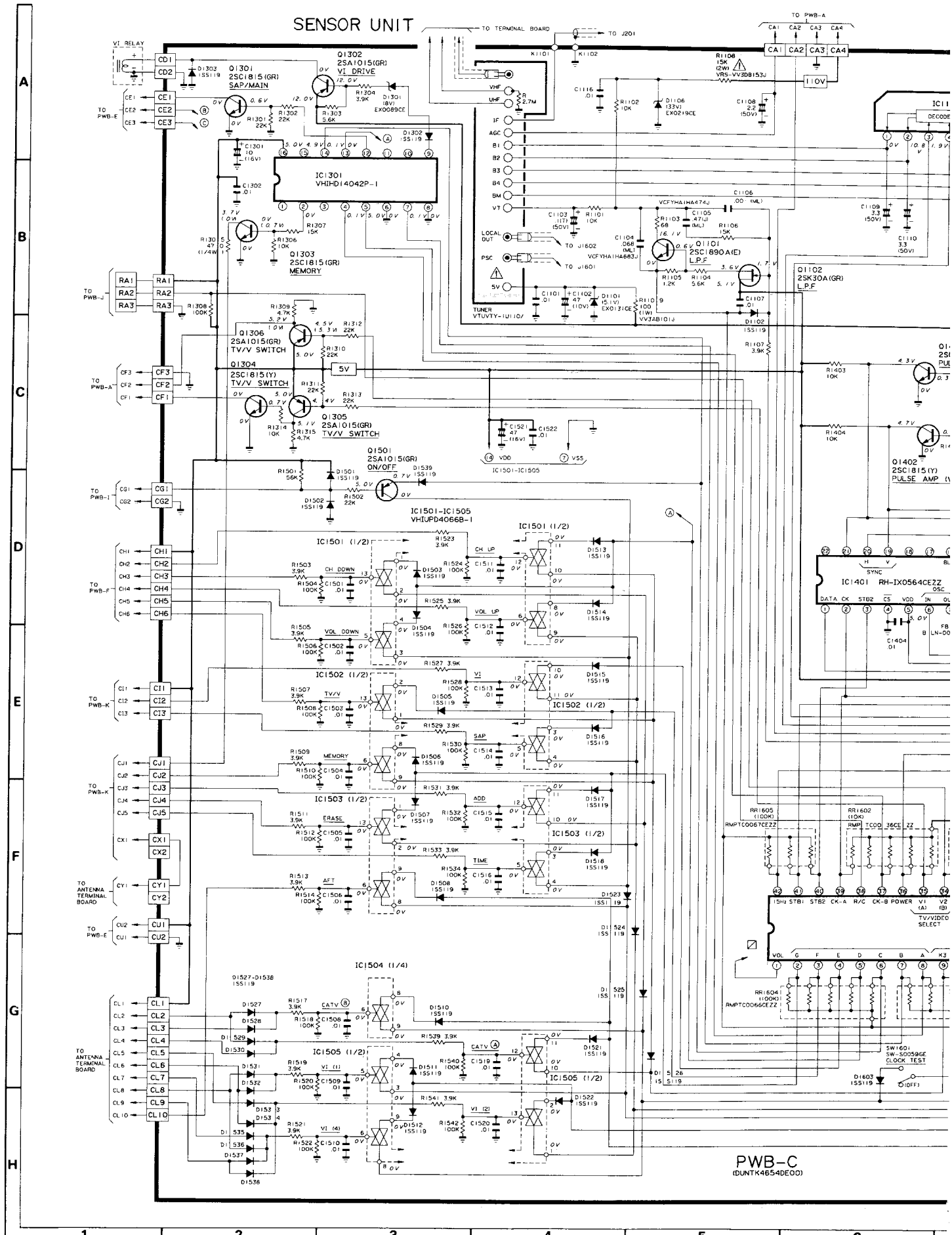


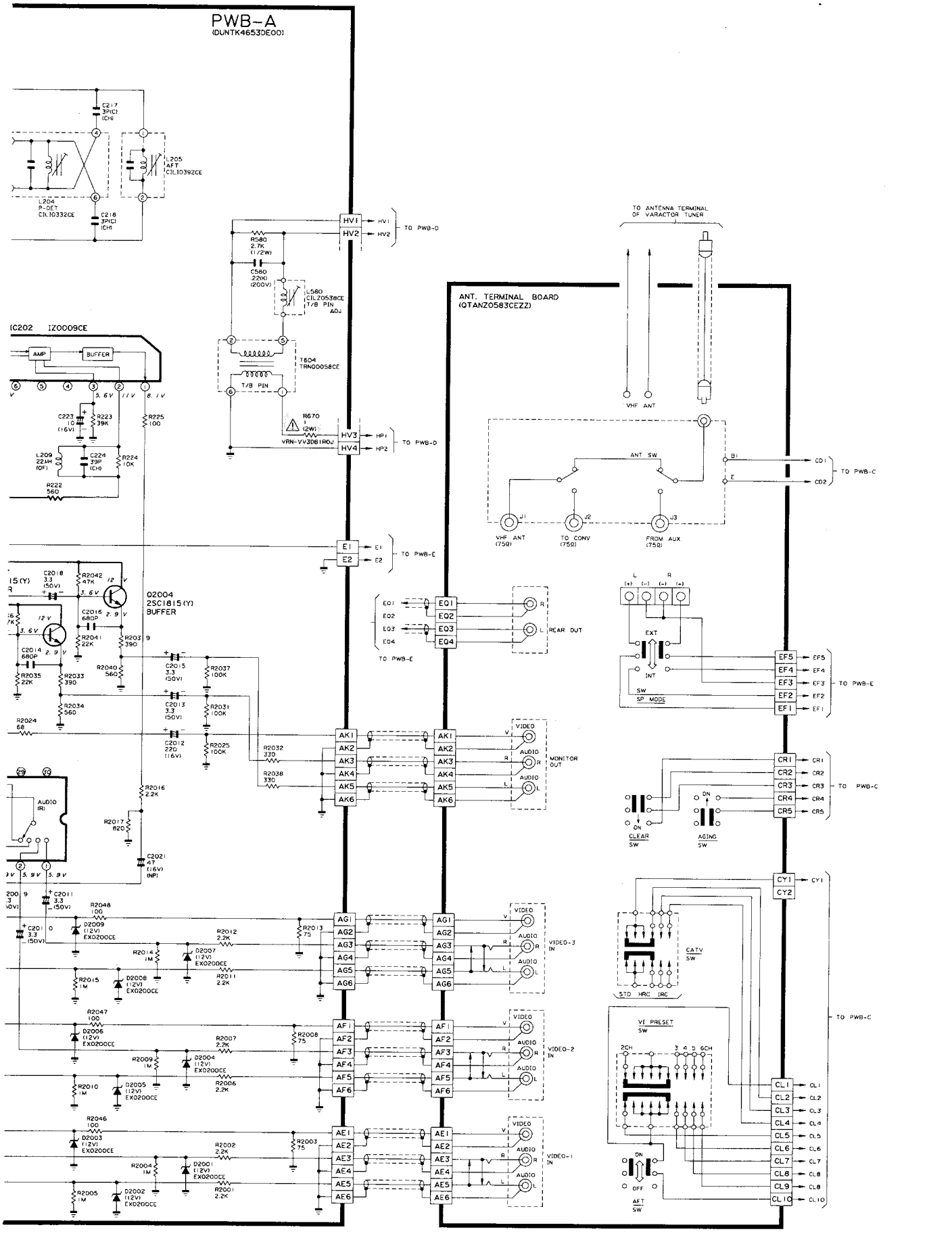
BLOCK DIAGRAM

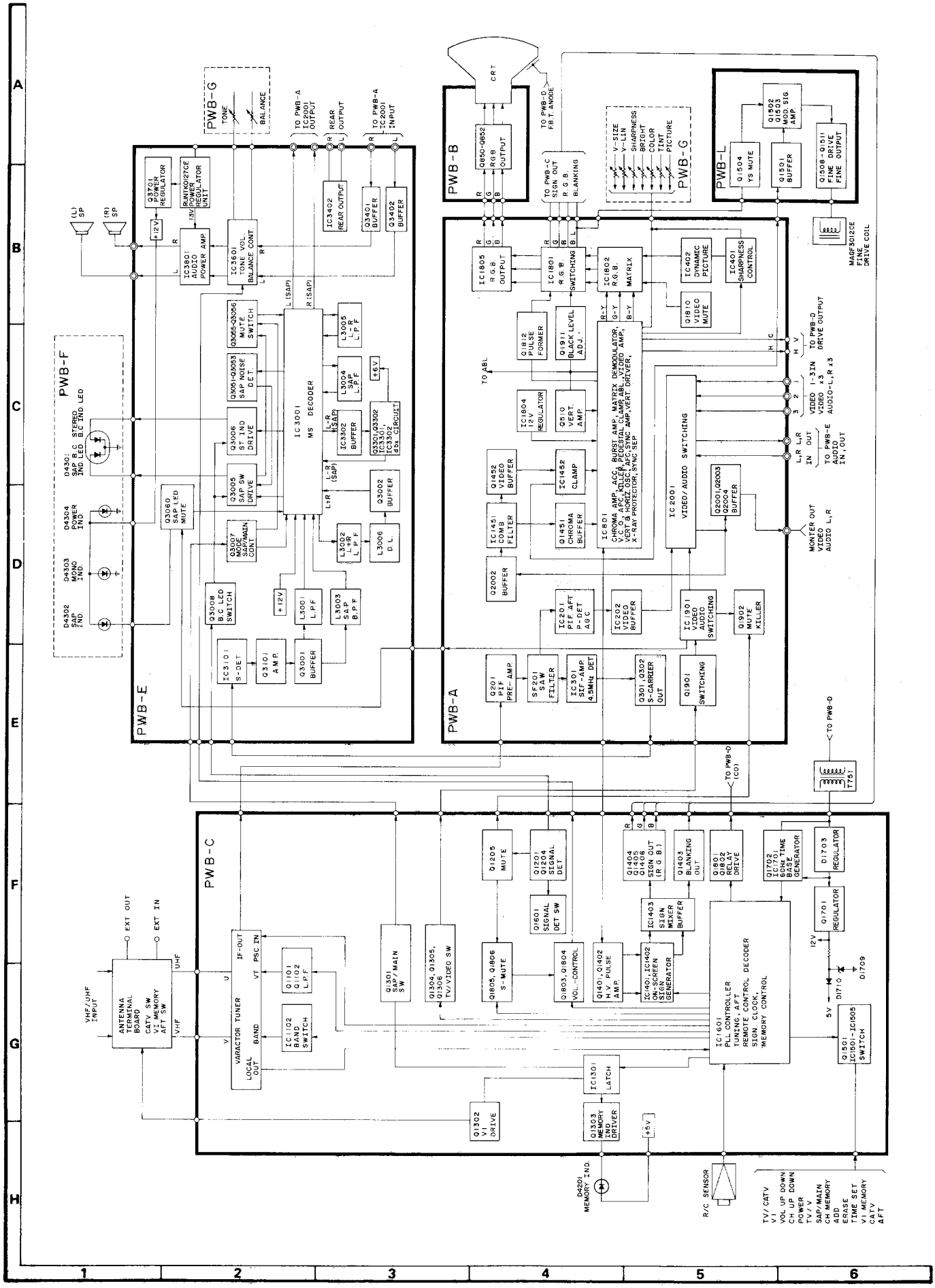



MAIN2
IC1901 IX0260CE
IC2001 IX0515CE
IC201 IX0252CE
IC301 IX0058GE
Q2703 2SC1983 REG.
Q0201 2SC1906 PRE AMP.
Q0301 2SC1815(Y) S-CARRIER AMP
Q0302 2SC1815(Y) BUFFER
Q2002 2SC1815(Y) BUFFER
Q2001 2SC1815(Y) BUFFER
Q1901 2SC1815(Y) TV/V SWITCH
Q1902 2SC1815(Y) SAP LED MODE SWITCH
DECODER DRIVER
RF AGC
IF AMP
IF AGC
AFT DET
VIDEO AMP
PIF AMP
NOISE CANCELLER
PIX DET
SIF-DET
12V
15V
TO PWB-C
TO PWB-K
TO PWB-E


TO PWB-A
CB6 CB4 CB3 CB2 CB1 CB5
TO PWB-E
CV1 CV2
TO PWB-A
CZ1 CZ2
IX0260CE
DRIVER
Q1201
2SC1815(Y)
SYNC AMP
Q1203
2SC1890A(E)
BUFFER
Q1202
2SA1015(Y)
SYNC AMP
Q1204
2SC1815(Y)
S.D. AMP
Q1205
2SC1815(Y)
MUTE
TP1201
12V
IC1403
VHISN74LS32-I
Q1403
2SC454(C)
BLANKING
Q1404
2SC454(C)
BLUE OUT
Q1405
2SC454(C)
GREEN OUT
Q1406
2SC454(C)
RED OUT
IC1402 RH-IX0564CEZZ (DISPLAY)
(DISPLAY)
Q1801
2SA1015(GR)
RELAY DRIVE
Q1802
2SC1815(GR)
RELAY DRIVE
Q1803
2SC1815(Y)
VOL.CONT
Q1804
2SC1815(Y)
VOL.CONT
Q1805
2SA1015(Y)
MUTE
Q1806
2SC1815(GR)
MUTE
TO TUNER
TO PSC
TO LOCAL OUT
IC1601
RH-IX0579CEZZ
(PLL)
IC1701
VHITC4013BP-I
Q1702
2SA1015(GR)
60Hz TIME
BASE
Q1601
2SA1015(GR)
SD.SWITCH
Q1701
2SC1983
REGULATOR
VRS-VV3D8470J
T751
TRNP0386CE
THIS AREA IS HOT SIDE
THIS AREA IS COLD SIDE
TO PWB-D
TO PWB-E
TO PWB-A
TO PWB-K
5V
12V


SENSOR UNIT
PWB-C
(DUNTK4654DE00)
IC1301
VHIHD14042P-1
Q1301
2SC1815(GR)
SAP/MAIN
Q1302
2SA1015(GR)
VI DRIVE
Q1303
2SC1815(GR)
MEMORY
Q1304
2SC1815(Y)
TV/V SWITCH
Q1305
2SA1015(GR)
TV/V SWITCH
Q1306
2SA1015(GR)
TV/V SWITCH
Q1501
2SA1015(GR)
ON/OFF
IC1501-IC1505
VHIUPD4066B-1
IC1501 (1/2)
IC1502 (1/2)
IC1503 (1/2)
IC1504 (1/4)
IC1505 (1/2)
Q1101
2SC1890A(E)
L.P.F
Q1102
2SK30A(GR)
L.P.F
Q1402
2SC1815(Y)
PULSE AMP
IC1401 RH-IX0564CEZZ
TUNER
VTUVTY-(U)10/
TO TERMINAL BOARD
TO J201
TO PWB-A
TO PWB-E
TO PWB-J
TO PWB-A
TO PWB-I
TO PWB-F
TO PWB-K
TO PWB-K
TO ANTENNA TERMINAL BOARD
TO PWB-E
TO ANTENNA TERMINAL BOARD
TO J1602
TO J1601
VI RELAY
CH UP
CH DOWN
VOL UP
VOL DOWN
TV/V
MEMORY
SAP
ERASE
ADD
TIME
AFT
CATV
VI (1)
VI (2)
VI (4)
VI
SYNC
TV/VIDEO SELECT
CLOCK TEST
SW1601
SW-S0059GE
RR1605 (100K)
RMPTC0067CEZZ
RR1602 (10K)
RMPTC0036CEZZ
RR1604 (100K)
RMPTC0066CEZZ
DECODE

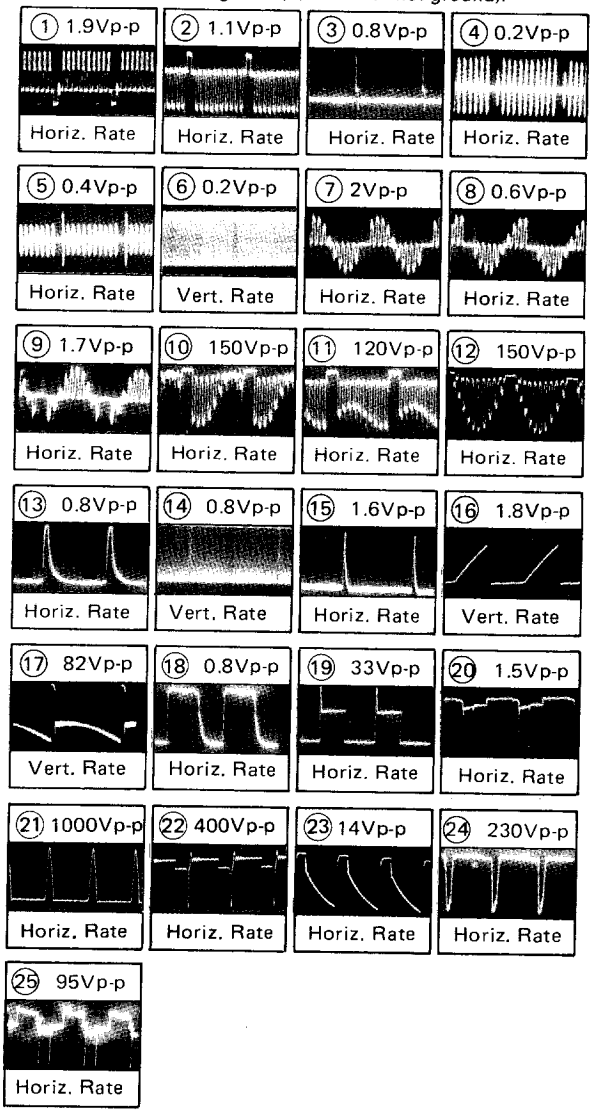

PWB-A
(DUNTK4653DE00)
ANT. TERMINAL BOARD
(QTANZ0583CEZZ)
TO ANTENNA TERMINAL OF VARACTOR TUNER
VHF ANT
ANT SW
VHF ANT (75Ω)
TO CONV (75Ω)
FROM AUX (75Ω)
TO PWB-C
TO PWB-D
TO PWB-E
IC202 IZ0009CE
AMP
BUFFER
Q2004 2SC1815(Y) BUFFER
REAR OUT
MONITOR OUT
VIDEO-3 IN
VIDEO-2 IN
VIDEO-1 IN
EXT
INT
SP MODE
CLEAR SW
AGING SW
CATV SW
STD HRC IRC
VI PRESET SW
AFT SW


PWB-E
PWB-A
PWB-B
PWB-C
PWB-F
PWB-G
PWB-L
IC3001 MS DECODER
IC1801 CHROMA AMP, ACC, BURST AMP, MATRIX DEMODULATOR, V.C.O., APC, KILLER, PEDESTAL CLAMP, ABL, VIDEO AMP, VERT & HORIZ. OSC, AFC, SYNC AMP, VERT. DRIVER, X-RAY PROTECTOR, SYNC SEP
IC2001 VIDEO/AUDIO SWITCHING
IC1601 PLL CONTROLLER TUNING, AFT REMOTE CONTROL DECODER SIGN, CLOCK, *MEMORY CONTROL
ANTENNA TERMINAL BOARD
CATV SW
VI MEMORY
AFT SW
VARACTOR TUNER
CRT
R/C SENSOR
TO PWB-A
TO PWB-B
TO PWB-C
TO PWB-D
TO PWB-E
TO ABL
TO PWB-D DRIVE OUTPUT
TV/CATV
VI
VOL UP DOWN
CH UP DOWN
POWER
TV/V
SAP/MAIN
CH MEMORY
ADD
ERASE
TIME SET
VI MEMORY
CATV
AFT

WAVEFORMS

WAVEFORM MEASUREMENT CONDITIONS:

1. *Photographs taken on a standard gated rainbow color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. *indicates wave form check points (See chart, waveforms are measured from point indicated to each applicable chassis ground, isolated or hot ground).*



NOTE:

1. *The unit of resistance "ohm" is omitted (K: 1000 ohms, M:I Meg ohm).*
2. *All resistors are 1/8 watt, unless otherwise noted.*
3. *All capacitors are μF, unless otherwise noted P:μμF.*
4. *(G) indicates ±2% tolerance may be used.*
5. *⏚ indicates line isolated ground.*

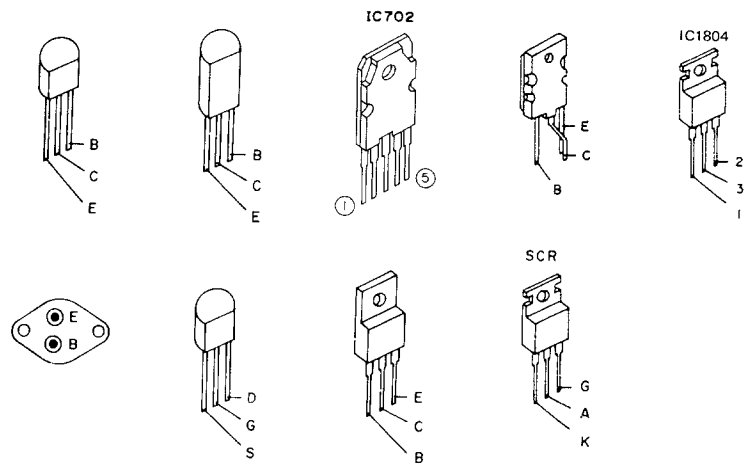
VOLTAGE MEASUREMENT CCNDITIONS:

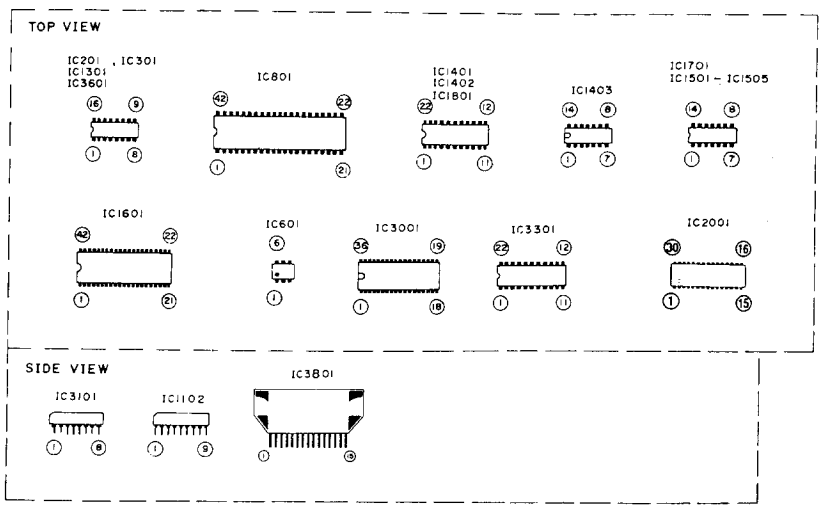
1. *All DC voltages are measured with VTVM connected between points indicated and each applicable chassis ground, isolated or hot ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000μV B & W or Color signal.*

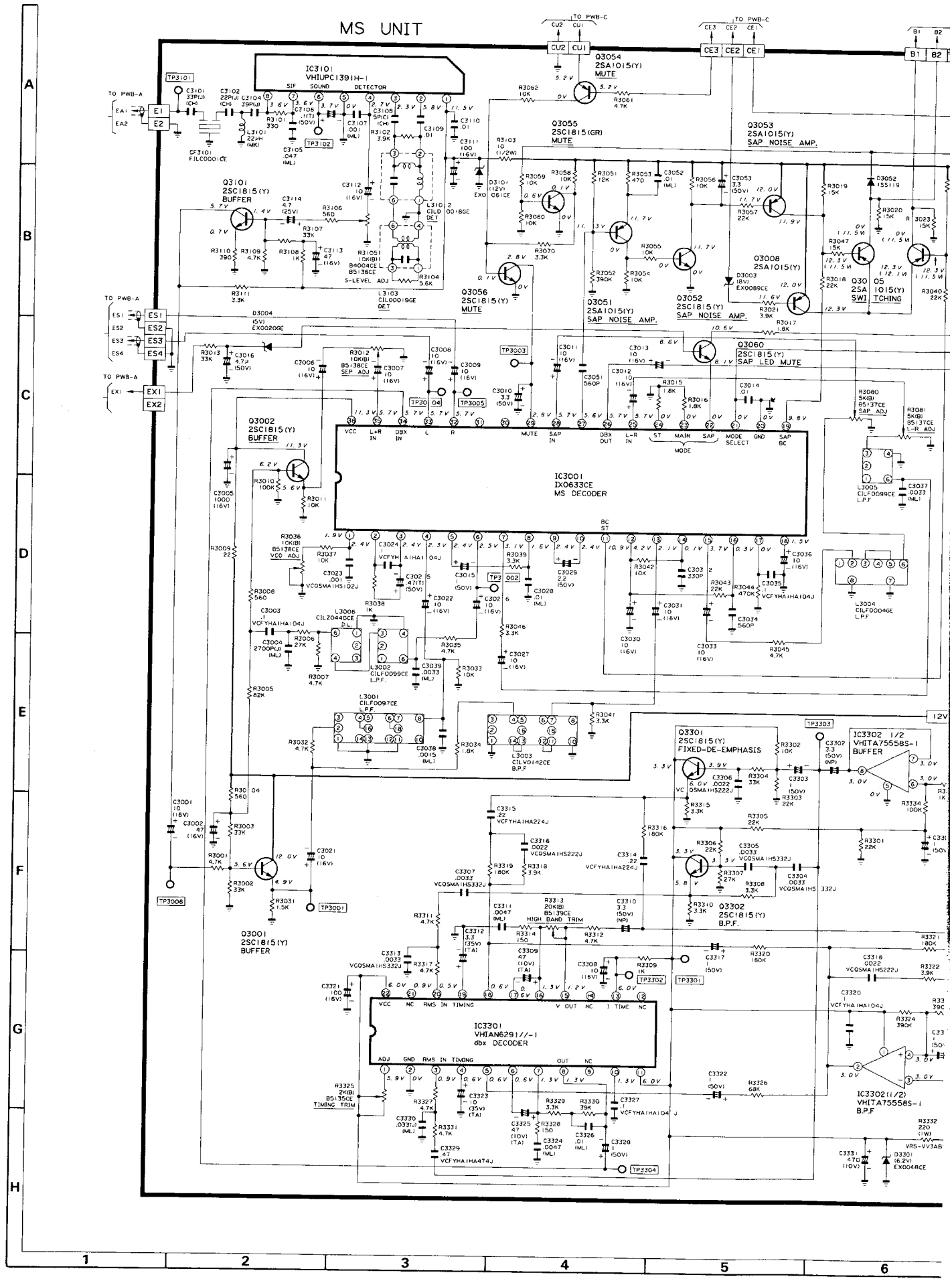
⚠ AND SHADED COMPONENTS; SAFETY RELATED PARTS, ▲ MARK; X-RAY RELATED PARTS.

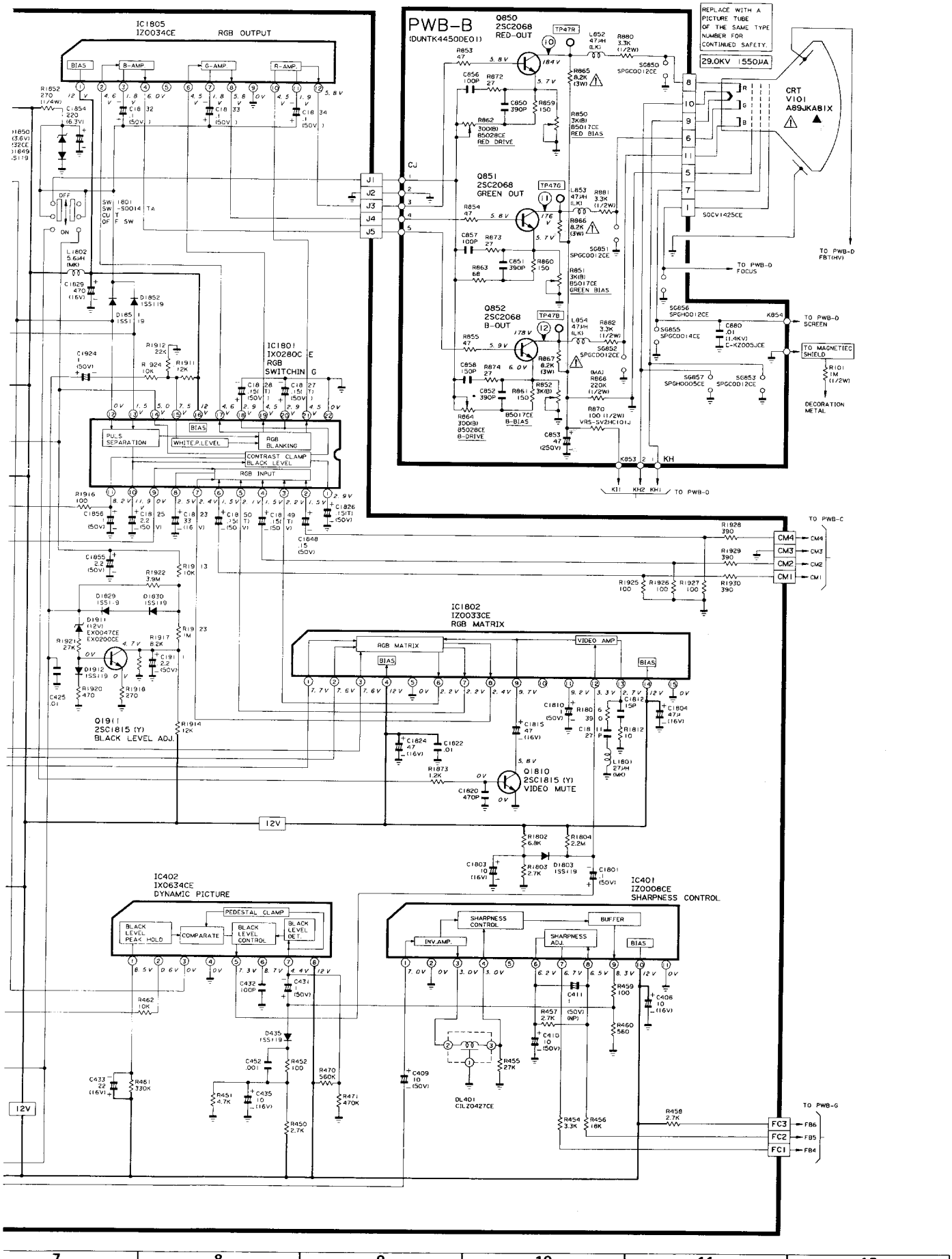
This circuit diagram is a standard one, circuits printed may be subject to change for product improvement without prior notice.

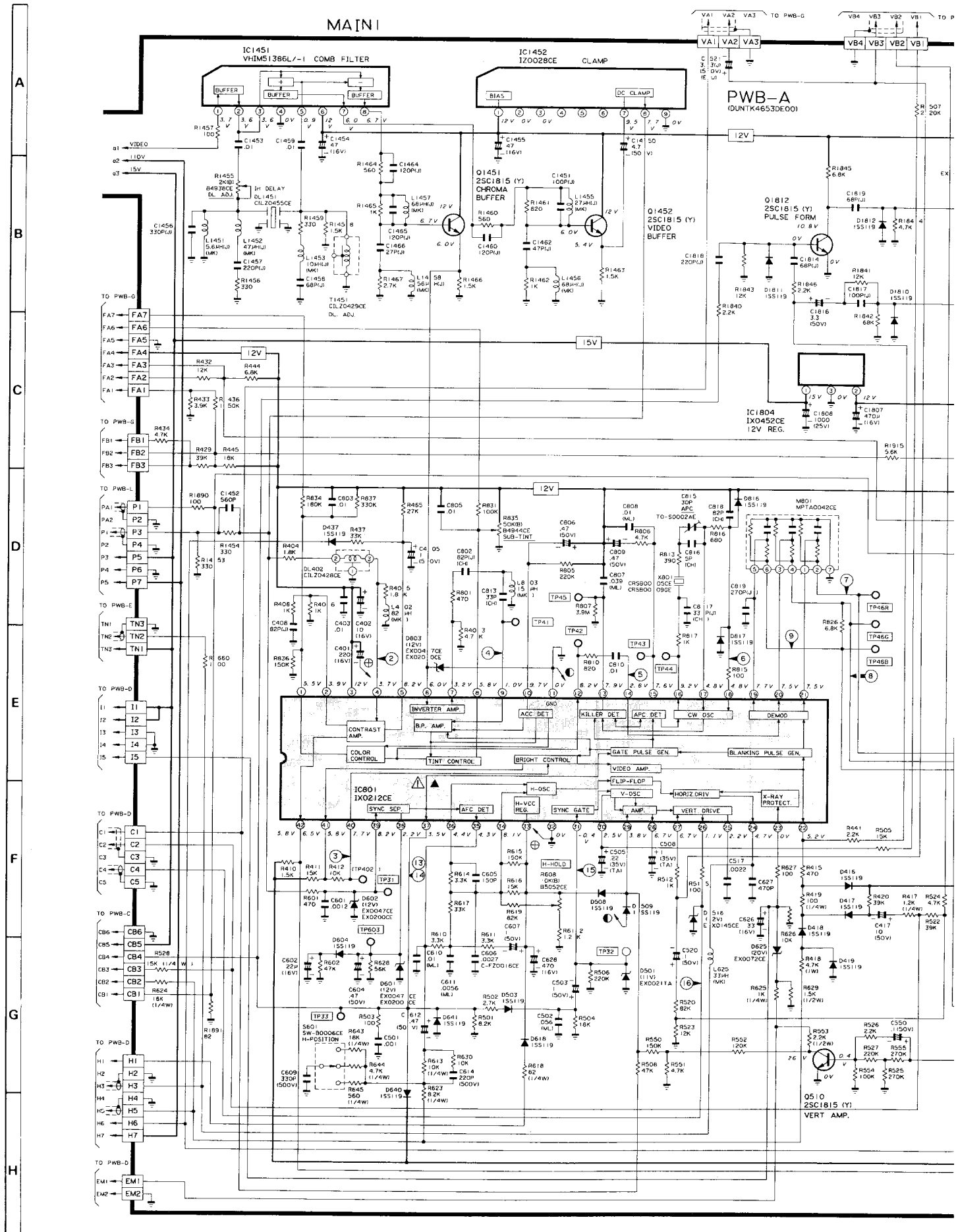
SOLID STATE DEVICE BASE DIAGRAM

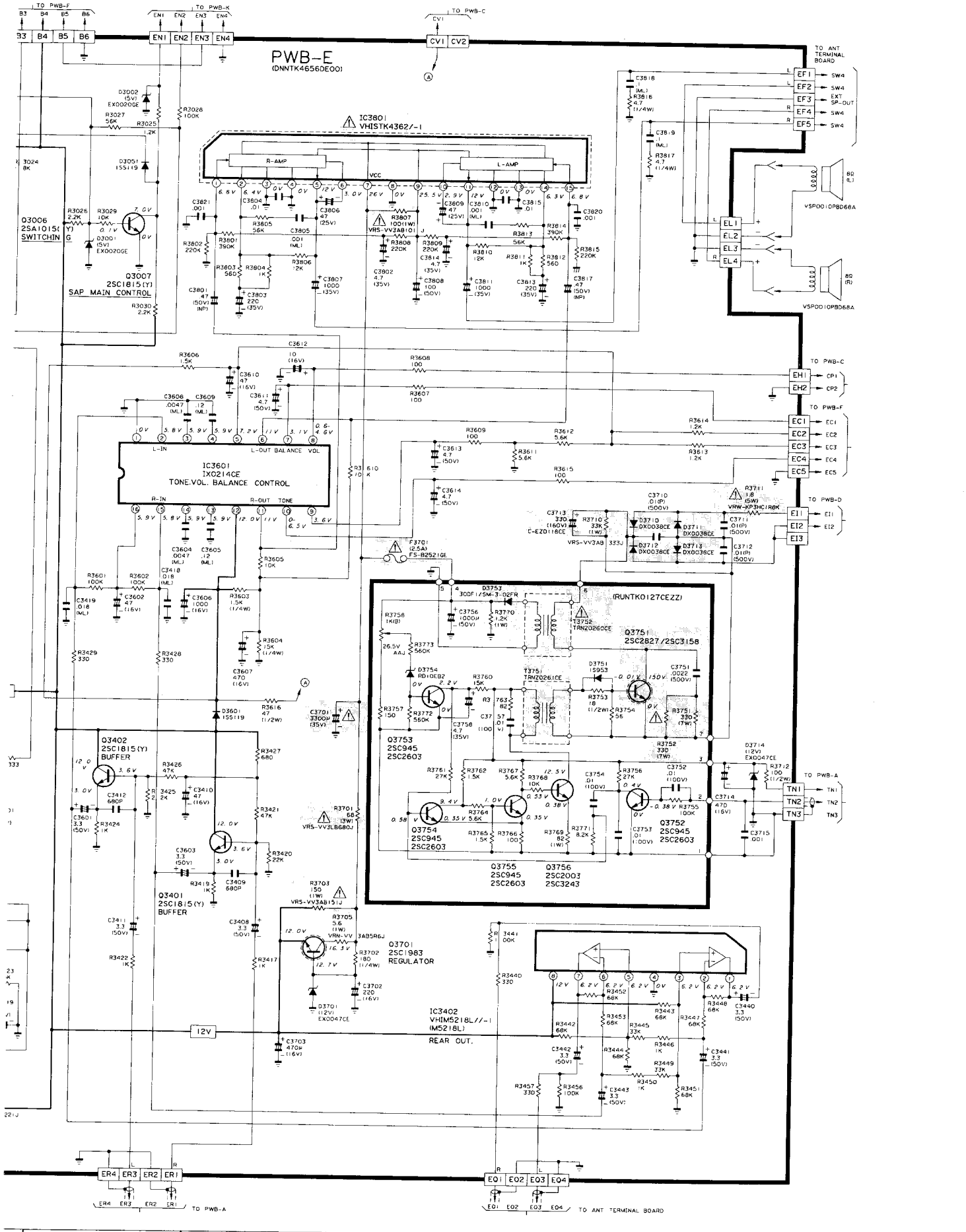


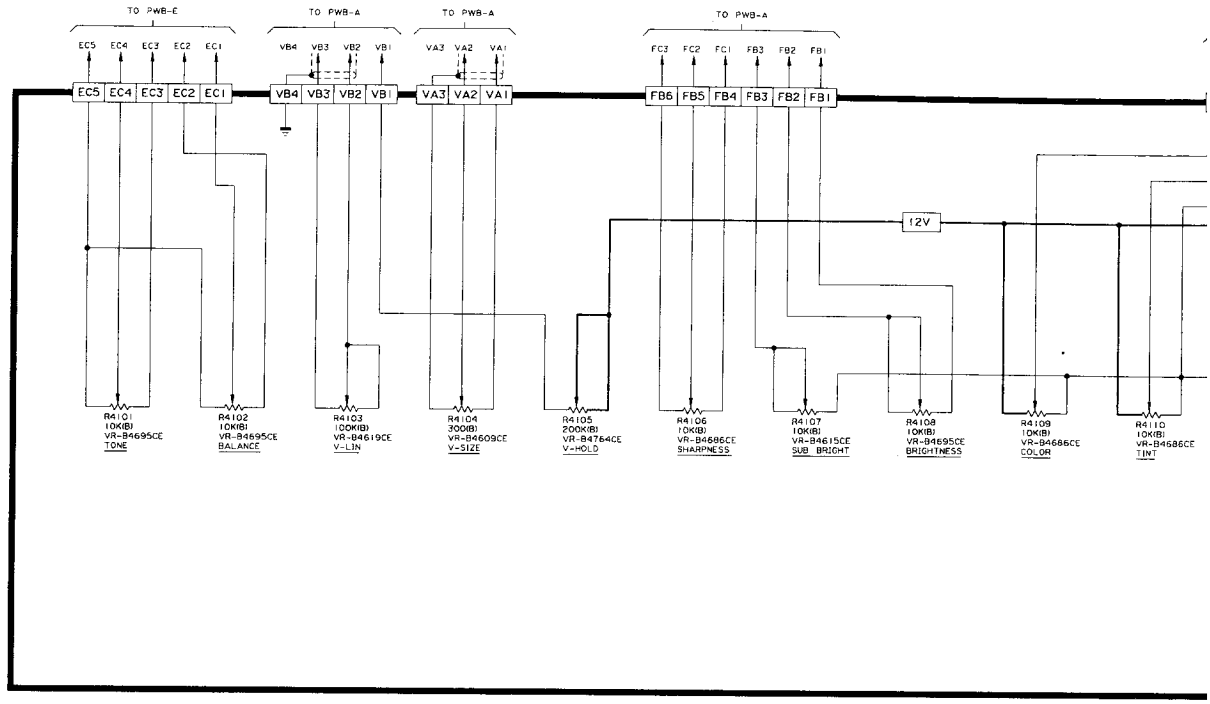


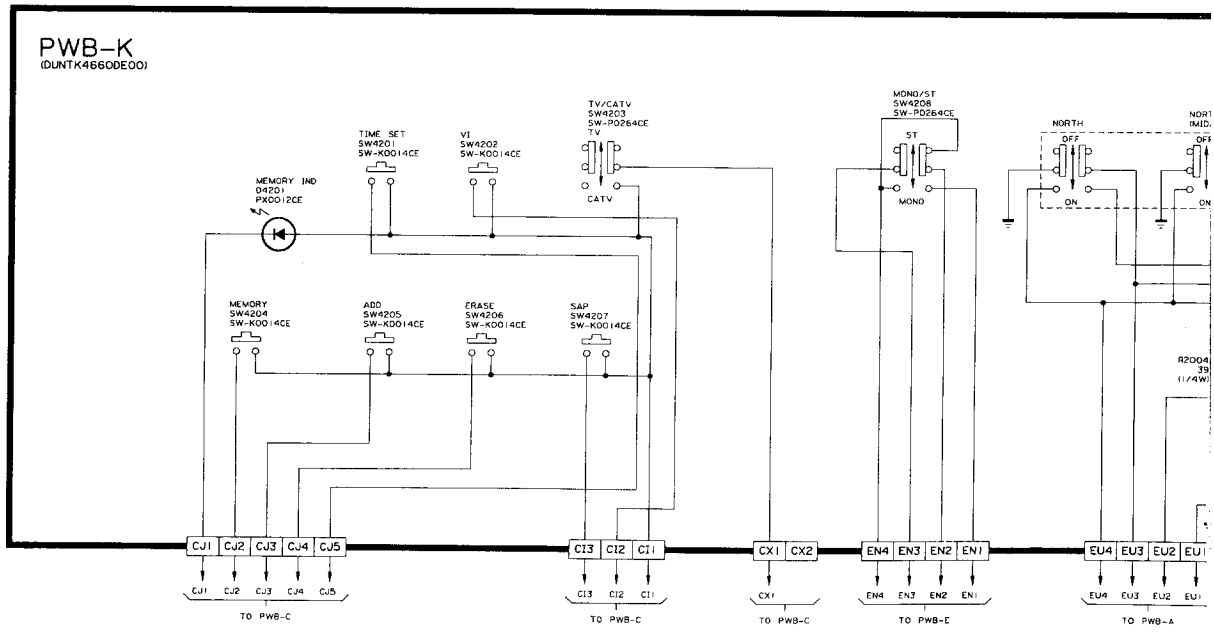

MS UNIT
IC3101
VHIUPC1391H-1
SIF SOUND DETECTOR
Q3101
2SC1815(Y)
BUFFER
Q3054
2SA1015(Y)
MUTE
Q3055
2SC1815(GR)
MUTE
Q3053
2SA1015(Y)
SAP NOISE AMP.
Q3008
2SA1015(Y)
Q3056
2SC1815(Y)
MUTE
Q3051
2SA1015(Y)
SAP NOISE AMP.
Q3052
2SC1815(Y)
SAP NOISE AMP.
Q3060
2SC1815(Y)
SAP LED MUTE
Q3002
2SC1815(Y)
BUFFER
IC3001
IX0633CE
MS DECODER
VCC L+R IN DBX IN L R MUTE SAP IN DBX OUT L-R IN ST MAIN SAP MODE SELECT GND SAP BC
Q3001
2SC1815(Y)
BUFFER
Q3301
2SC1815(Y)
FIXED-DE-EMPHASIS
Q3302
2SC1815(Y)
B.P.F
IC3302 1/2
VHITA7555BS-1
BUFFER
IC3301
VHIAN6291//-1
dbx DECODER
VCC NC RMS IN TIMING V OUT NC 1 TIME NC
ADJ GND RMS IN TIMING OUT NC
IC3302(1/2)
VHITA7555BS-1
B.P.F
TO PWB-A
TO PWB-C
TP3101
TP3102
TP3003
TP3004
TP3005
TP3006
TP3007
TP3301
TP3302
TP3303
TP3304
12V

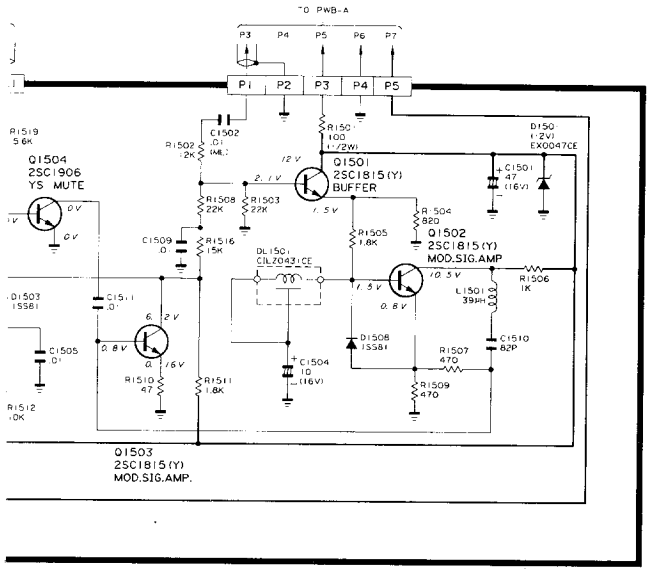

PWB-B
(DUNTK4450DE01)
IC1805
IZ0034CE
RGB OUTPUT
BIAS
B-AMP
G-AMP
R-AMP
Q850
2SC2068
RED-OUT
Q851
2SC2068
GREEN OUT
Q852
2SC2068
B-OUT
REPLACE WITH A PICTURE TUBE OF THE SAME TYPE NUMBER FOR CONTINUED SAFETY.
29.0KV 1550μA
CRT
V101
A89JKA81X
TO PWB-D
FBT(HV)
TO PWB-D
FOCUS
TO PWB-D
SCREEN
TO MAGNETIC SHIELD
DECORATION METAL
IC1801
IX0280CE
RGB
SWITCHING
PULS SEPARATION
BLANKING
WHITE P. LEVEL
CONTRAST CLAMP
BLACK LEVEL
RGB INPUT
TO PWB-C
IC1802
IZ0033CE
RGB MATRIX
VIDEO AMP
Q1911
2SC1815 (Y)
BLACK LEVEL ADJ.
Q1810
2SC1815 (Y)
VIDEO MUTE
12V
IC402
IX0634CE
DYNAMIC PICTURE
PEDESTAL CLAMP
BLACK LEVEL PEAK HOLD
COMPARATE
BLACK LEVEL CONTROL
BLACK LEVEL DET
IC401
IZ0008CE
SHARPNESS CONTROL
SHARPNESS CONTROL
BUFFER
INV. AMP.
SHARPNESS ADJ.
DL401
CILZ0427CE
TO PWB-G

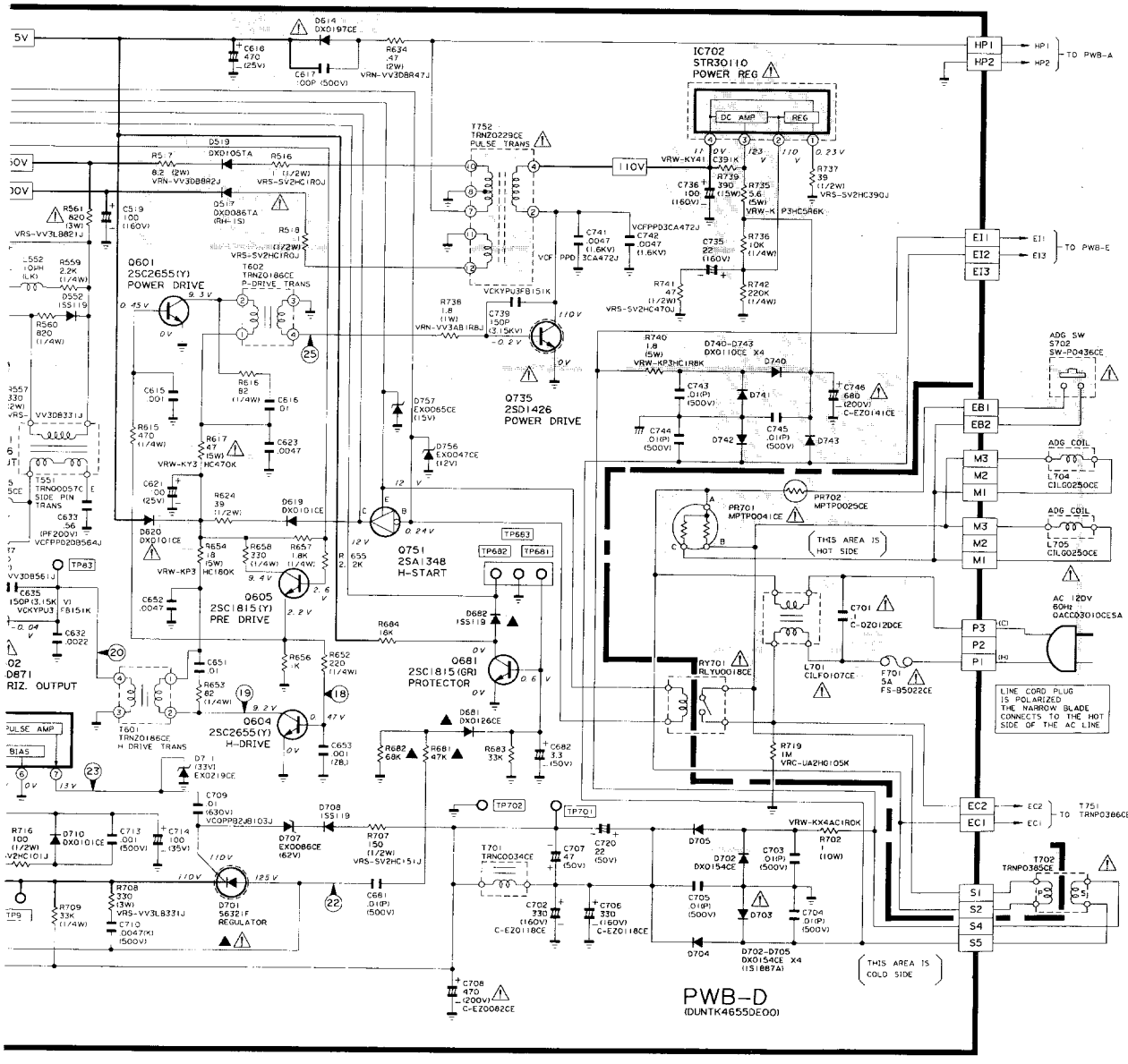

MAIN
PWB-A
(DUNTK4653DE00)
IC1451
VHIM51386L/-1 COMB FILTER
IC1452
IZ0028CE CLAMP
Q1451
2SC1815 (Y)
CHROMA
BUFFER
Q1452
2SC1815 (Y)
VIDEO
BUFFER
Q1812
2SC1815 (Y)
PULSE FORM
IC1804
IX0452CE
12V REG.
Q510
2SC1815 (Y)
VERT AMP.
IC801
IX0212CE
INVERTER AMP
B.P. AMP.
CONTRAST AMP.
COLOR CONTROL
TINT CONTROL
BRIGHT CONTROL
ACC DET
KILLER DET
APC DET
CW OSC
DEMOD
GATE PULSE GEN.
BLANKING PULSE GEN.
VIDEO AMP.
FLIP-FLOP
H-OSC
V-OSC
HORIZ DRIV
X-RAY PROTECT.
SYNC SEP.
AFC DET
H-VCC REG.
SYNC GATE
VERT DRIVE
12V
15V
TO PWB-G
TO PWB-L
TO PWB-E
TO PWB-D
TO PWB-C
TO PWB-D
TO PWB-D
TO PWB-D


PWB-E
(DNNTK4656DE00)
IC3601
VHISTK4362/-1
R-AMP
L-AMP
VCC
IC3601
IX0214CE
TONE.VOL. BALANCE CONTROL
L-IN
L-OUT BALANCE VOL
R-IN
R-OUT TONE
Q3006
2SA1015(Y)
SWITCHING
Q3007
2SC1815(Y)
SAP MAIN CONTROL
Q3402
2SC1815(Y)
BUFFER
Q3401
2SC1815(Y)
BUFFER
Q3753
2SC945
2SC2603
Q3754
2SC945
2SC2603
Q3755
2SC945
2SC2603
Q3756
2SC2003
2SC3243
Q3751
2SC2827/2SC3158
Q3752
2SC945
2SC2603
Q3701
2SC1983
REGULATOR
IC3402
VHIM5218L//-1
(M5218L)
REAR OUT.
(RUNTK0127CEZZ)
TO ANT TERMINAL BOARD
TO PWB-A
TO PWB-C
TO PWB-D
TO PWB-F
TO PWB-K
12V


TO PWB-E
TO PWB-A
TO PWB-A
TO PWB-A
EC5 EC4 EC3 EC2 EC1
VB4 VB3 VB2 VB1
VA3 VA2 VA1
FC3 FC2 FC1 FB3 FB2 FB1
FB6 FB5 FB4 FB3 FB2 FB1
12V
R4101 10K(B) VR-B4695CE TONE
R4102 10K(B) VR-B4695CE BALANCE
R4103 100K(B) VR-B4619CE V-LIN
R4104 300(B) VR-B4609CE V-SIZE
R4105 200K(B) VR-B4764CE V-HOLD
R4106 10K(B) VR-B4686CE SHARPNESS
R4107 10K(B) VR-B4615CE SUB BRIGHT
R4108 10K(B) VR-B4695CE BRIGHTNESS
R4109 10K(B) VR-B4686CE COLOR
R4110 10K(B) VR-B4686CE TINT

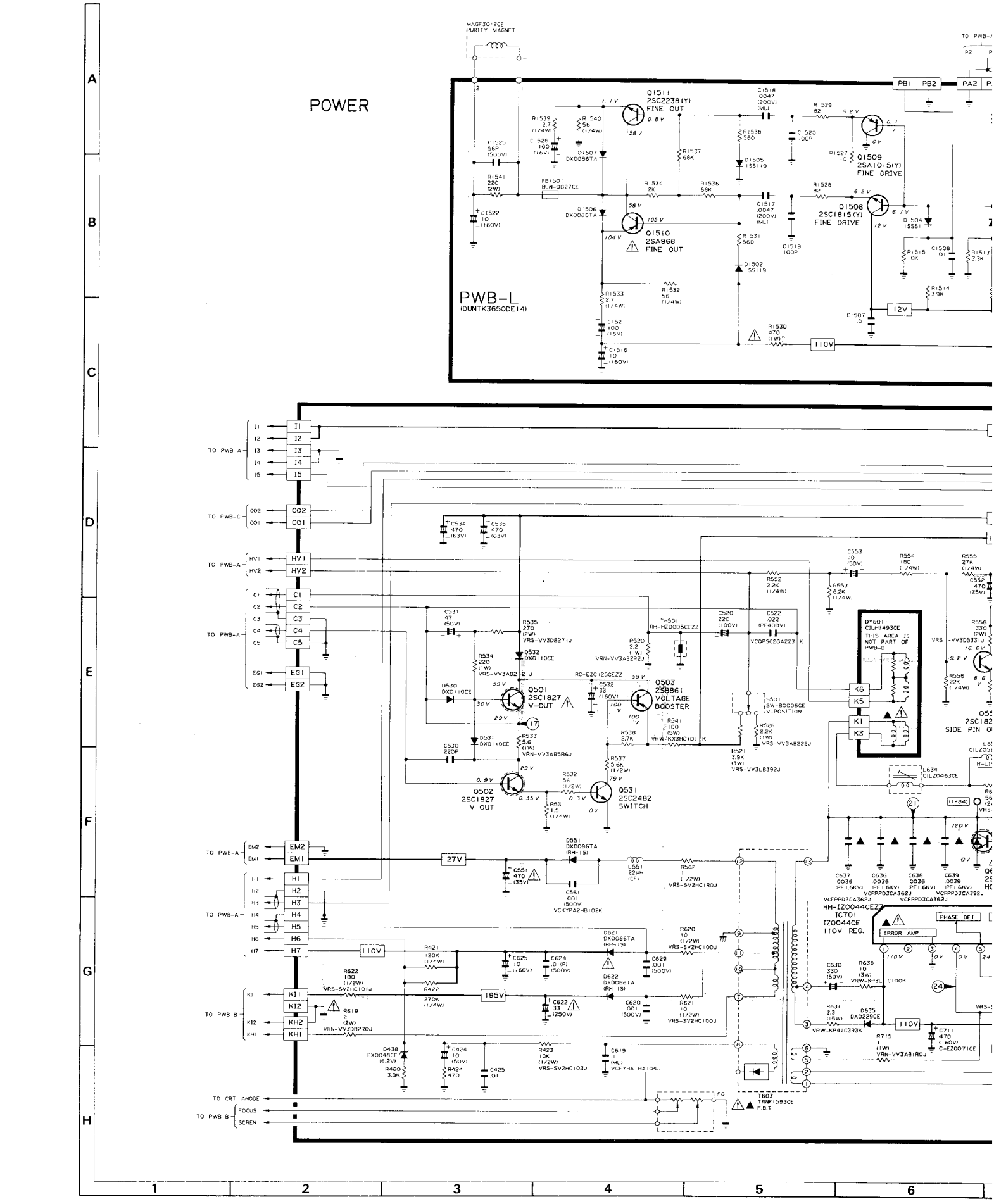

PWB-K
(DUNTK4660DE00)
TIME SET SW4201 SW-K0014CE
VI SW4202 SW-K0014CE
TV/CATV SW4203 SW-P0264CE TV
CATV
MONO/ST SW4208 SW-P0264CE
ST
MONO
NORTH
OFF
ON
MEMORY IND D4201 PX0012CE
MEMORY SW4204 SW-K0014CE
ADD SW4205 SW-K0014CE
ERASE SW4206 SW-K0014CE
SAP SW4207 SW-K0014CE
CJ1 CJ2 CJ3 CJ4 CJ5
CI3 CI2 CI1
CX1 CX2
EN4 EN3 EN2 EN1
EU4 EU3 EU2 EU1
TO PWB-C
TO PWB-C
TO PWB-C
TO PWB-E
TO PWB-A

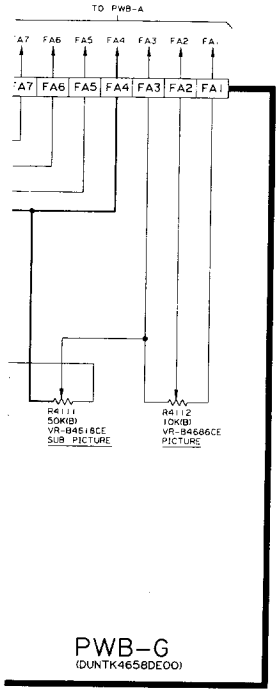

TO PWB-A
P1 P2 P3 P4 P5
Q1504
2SC1906
YS MUTE
Q1501
2SC1815(Y)
BUFFER
Q1502
2SC1815(Y)
MOD.SIG.AMP
Q1503
2SC1815(Y)
MOD.SIG.AMP.

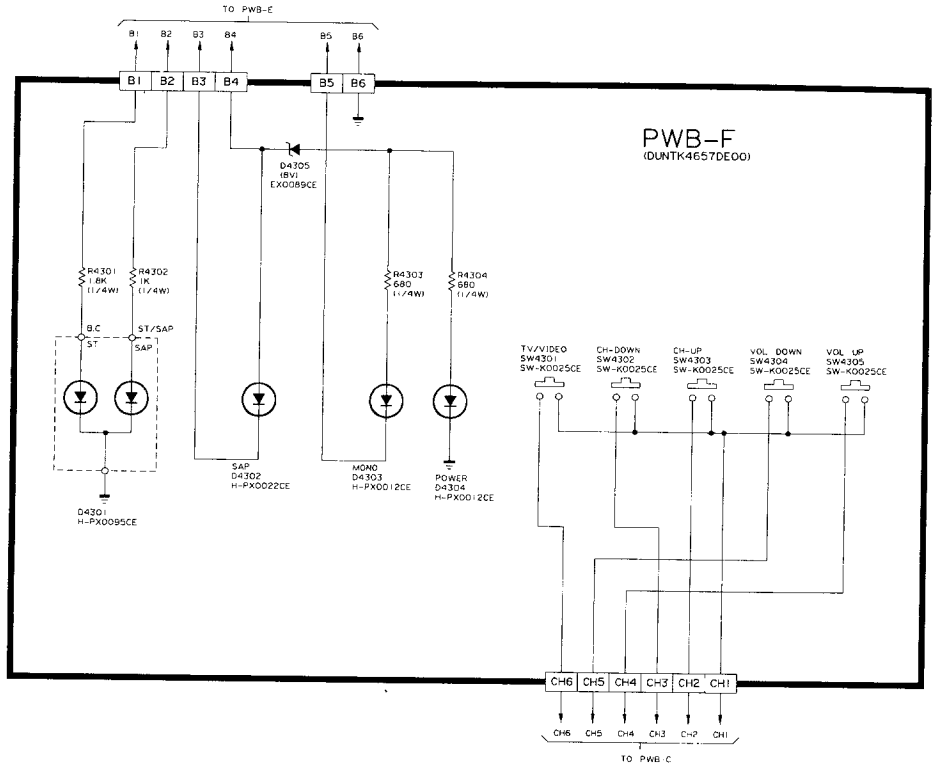

IC702
STR30110
POWER REG
DC AMP
REG
Q601
2SC2655(Y)
POWER DRIVE
Q735
2SD1426
POWER DRIVE
Q751
2SA1348
H-START
Q605
2SC1815(Y)
PRE DRIVE
Q681
2SC1815(GR)
PROTECTOR
Q604
2SC2655(Y)
H-DRIVE
D701
5632IF
REGULATOR
TO PWB-A
TO PWB-E
ADG SW
ADG COIL
AC 120V
60Hz
LINE CORD PLUG
IS POLARIZED
THE NARROW BLADE
CONNECTS TO THE HOT
SIDE OF THE AC LINE
THIS AREA IS
HOT SIDE
THIS AREA IS
COLD SIDE
PWB-D
(DUNTK4655DE00)

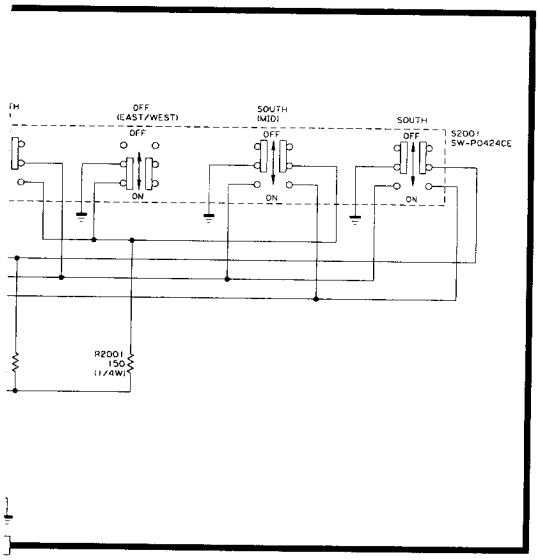
7	8	9	10	11	12

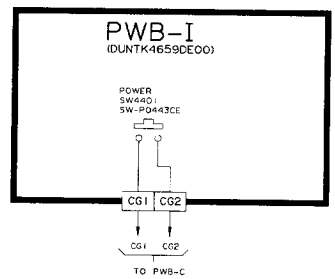
POWER

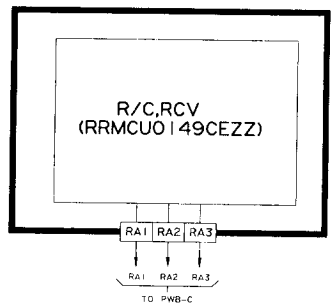

PWB-L
(DUNTK3650DE14)
Q1511 2SC2238(Y) FINE OUT
Q1510 2SA968 FINE OUT
Q1509 2SA1015(Y) FINE DRIVE
Q1508 2SC1815(Y) FINE DRIVE
PB1
PB2
PA2
12V
110V
Q501 2SC1827 V-OUT
Q502 2SC1827 V-OUT
Q503 2SB861 VOLTAGE BOOSTER
Q531 2SC2482 SWITCH
IC701 IZ0044CE 110V REG.
27V
195V
T603 TNF1593CE F.B.T
TO PWB-A
TO PWB-B
TO PWB-C
TO CRT ANODE
FOCUS
SCREN


TO PWB-A
FA7 FA6 FA5 FA4 FA3 FA2 FA1
R4111
50K(B)
VR-B4618CE
SUB PICTURE
R4112
10K(B)
VR-B4686CE
PICTURE
PWB-G
(DUNTK4658DE00)


TO PWB-E
B1 B2 B3 B4 B5 B6
PWB-F
(DUNTK4657DE00)
D4305
(BV)
EX0089CE
R4301
1.8K
(1/4W)
R4302
1K
(1/4W)
R4303
680
(1/4W)
R4304
680
(1/4W)
B.C
ST
ST/SAP
SAP
D4301
H-PX0095CE
SAP
D4302
H-PX0022CE
MONO
D4303
H-PX0012CE
POWER
D4304
H-PX0012CE
TV/VIDEO
SW4301
SW-K0025CE
CH-DOWN
SW4302
SW-K0025CE
CH-UP
SW4303
SW-K0025CE
VOL DOWN
SW4304
SW-K0025CE
VOL UP
SW4305
SW-K0025CE
CH6 CH5 CH4 CH3 CH2 CH1
TO PWB-C


OFF
(EAST/WEST)
SOUTH
(MID)
SOUTH
S2001
SW-P0424CE
OFF
ON
R2001
150
(1/4W)


PWB-I
(DUNTK4659DE00)
POWER
SW4401
SW-P0443CE
CG1 CG2
TO PWB-C


R/C,RCV
(RRMCU0149CEZZ)
RA1 RA2 RA3
TO PWB-C

REPLACEMENT PARTS LIST

SAFETY NOTE — Components marked with a (⚠) have special characteristics important to safety. Before replacing any these components, read cafully the SAFETY NOTICE on page 3 of the Service Manual. Components marked with an (▲) are related to X-Ray Protection circuit.
HOW TO ORDER REPLACEMENT PARTS — To have your order filled promptly and correctly, plase furnish the following information:
1. MODEL NO. 2. PART NO. 3. DESCRIPTION

Contact your nearest SHARP Parts Distributor to order.
For location of SHARP Parts Distributor, Please call Toll-Free; 800-447-4700 (In Hawaii and Alaska, please contact local SHARP dealer).

★ MARK: SPARE PARTS-DELIVERY SECTION

Ref. No.	Part No.	★	Description
PICTURE TUBE			
▲⚠V101	VB89JKA81X/ *J	J	CRT
▲⚠ DY601	RCi LH1493CEZZ	J	Deflection Yoke
⚠ L703	RCi LG0251CEZZ	J	Degaussing Coil
⚠ L704, 705	RCi LG0250CEZZ	J	Degaussing Coil
	PMAGF3012CEZZ	J	Purity Magnet
	PSPAG0028CEZZ	J	Wedge (Rubber) Yoke Positioning
	PSPAG0031CEZZ	J	Wedge (Rubber) Yoke Positioning (2 Used)
PRINTED WIRING BOARD ASSEMBLIES (NOT REPLACEMENT ITEM)			
PWB-A	DUNTK4653DE00	—	Mother Unit
PWB-B	DUNTK4450DE01	—	CRT Socket Unit
PWB-C	DUNTK4654DE00	—	Sensor Unit
PWB-D	DUNTK4655DE00	—	Power Unit
PWB-E	DUNTK4656DE00	—	MS Unit
PWB-F	DUNTK4657DE00	—	LED Unit
PWB-G	DUNTK4658DE00	—	Control Unit
PWB-I	DUNTK4659DE00	—	Power Switch Unit
PWB-K	DUNTK4660DE00	—	Switch Unit
PWB-L	DUNTK3650DE14	—	Fine Unit
PWB-A DUNTK4653DE00 MOTHER UNIT			
INTEGRATED CIRCUITS			
IC201	RH-iX0252CEZZ	J	
IC202	RH-iZ0009CEZZ	J	
IC301	RH-iX0058GEZZ	J	
IC401	RH-iZ0008CEZZ	J	
IC402	RH-iX0634CEZZ	J	
▲⚠ IC801	RH-iX0212CEZZ	J	
IC1451	VHiM51386L/-1	J	
IC1452	RH-iZ0028CEZZ	J	
IC1801	RH-iX0280CEZZ	J	
IC1802	RH-iZ0033CEZZ	J	
IC1804	RH-iX0452CEZZ	J	
IC1805	RH-iZ0034CEZZ	J	
IC1901	RH-iX0260CEZZ	J	
IC2001	RH-iX0515CEZZ	J	
TRANSISTORS			
Q201	VS2SC1906//1E	J	2SC1906
Q301, 302, 510, 1451, 1452, 1810, 1812, 1901, 1902, 1911, 2001 | 2004	VS2SC1815YW-1	J	2SC1815(Y)
Q2703	VS2SC1983//-2	J	2SC1983
DIODES			
D416 | 419, 435, 437, 503, 508, 509, 604, 618, 640, 641, 816, 817, 1803, 1810, 1811, 1812, 1829, 1830, 1849, 1851, 1852, 1903, 1904, 1912, 2017, 2721	VHD1SS119//-1	J	1SS119
D501	RH-EX0021TAZZ	J	Zener Diode RD11E
D516	RH-EX0145CEZZ	J	Zener Diode
D601, 602, 803, 1911, 2720	RH-EX0047CEZZ or RH-EX0200CEZZ	J	Zener Diode RD12E
⚠D625	RH-EX0072CEZZ	J	Zener Diode
D770	RH-EX0131CEZZ	J	Zener Diode RD5.1E
D1850	RH-EX0232CEZZ	J	Zener Diode
D1901	VHD1S1555//-1	J	1S1555
D1902	RH-EX0038CEZZ	J	Zener Diode RD12F
D2001 | 2016, 2018	RH-EX0200CEZZ	J	Zener Diode RD12E—T2

Ref. No.	Part No.	*	Description
PACKAGED CIRCUITS			
X801	RCRSB0005CEZZ	J	Crystal Osc. 3.58MHz
	or		
	RCRSB0009GEZZ	J	
M801	RMPTA0042CEZZ	J	Compensatory Parts
COILS			
L201	VP-RFR39K0000	J	0.39μH
L202	VP-RFR47K0000	J	0.47μH
L203	VP-RF1R8K0000	J	1.8μH
L204, 304	RCiLi0332CEZZ	J	PIF Detection SIF Detection
L205	RCiLi0392CEZZ	J	AFT
L206, 303	VP-RFR56K0000	J	0.56μH
L207 302	RCiLP0094CEZZ	J	180MHz Filter
L208	VP-MK100K0000	J	10μH
L209	VP-MK220K0000	J	22μH
L301	VP-RFR82K0000	J	0.82μH
L305	VP-MK120K0000	J	12μH
L402	VP-MK820K0000	J	82μH
L580	RCiLZ0538CEZZ	J	Pin Adjustment for Top and Bottom
L803	VP-MK150K0000	J	15μH
L1451	VP-MK5R6J0000	J	5.6μH
L1452	VP-MK470J0000	J	47μH
L1453	VP-MK100J0000	J	10μH
L1455	VP-MK270J0000	J	27μH
L1456, 1457	VP-MK680J0000	J	68μH
L1458	VP-MK560J0000	J	56μH
L1801	VP-MK270K0000	J	27μH
L1802	VP-MK5R6K0000	J	5.6μH
DL401	RCiLZ0427CEZZ	J	Delay Line
DL402	RCiLZ0428CEZZ	J	Delay Line
DL1451	RCiLZ0455CEZZ	J	Delay Line
CERAMIC FILTERS			
CF201	RFiLC0013CEZZ	J	Ceramic Filter 4.5MHz Trap
SF201	RFiLC0129CEZZ	J	Surface Acoustic Wave Filter
TRANSISTORS			
T604	RTRNQ0058CEZZ	J	Pincussion
T1451	RCiLZ0429CEZZ	J	Delay Adj.
CONTROLS			
R210, 608	RVR-B5052CEZZ	J	10k(B) RF AGC Horiz. Hold Adj.
R835	RVR-B4944CEZZ	J	50k(B) Sub Tint Adj.
R1455	RVR-B4938CEZZ	J	2k(B) Delay Adj.
CAPACITORS			
C209, 411	VCE9AA1HW105M	J	1 50V Electrolytic (N.P.)
C219, 628, 1807, 1829, 1905	VCEAAA1CW477M	J	470 16V Electrolytic
C401, 2012	VCEAAA1CW227M	J	220 16V Electrolytic
C505	VCSATA1VE224K	J	0.22 35V Tantalum
C508	VCSATA1VE105K	J	1 35V TAntalum
C580	VCQPPD2DB224K	J	0.22 200V Polypro Film
C606	RC-FZ0016CEZZ	J	0.0027 Metalized Polyester
C609	VCKYPA2HB331K	J	330p 500V Ceramic
C614	VCKYPA2HB221K	J	220p 500V Ceramic
C641	VCCSPA2HL271J	J	270p 500V Ceramic
C1808	VCEAAA1EW108M	J	1000 25V Electrolytic
C1854	VCEAAA0JW227M	J	220 6.3V Electrolytic
C2721	VCEAAA1EW477M	J	470 25V Electrolytic
C2723	VCEAAA1CW227M	J	220 16V Electrolytic
C815	RTō-S0002AEZZ	J	30pF APC
RESISTORS			
⚠ R418	VRS-VV3AB472J	J	4.7k 1W Oxide Film
⚠ R670	VRN-VV3DB1R0J	J	1 2W Metal Coating
⚠ R771	VRS-VV3AB181J	J	180 1W Oxide Film
⚠ R1906	VRS-VV3AB820J	J	82 1W Oxide Film
SWITCHES			
S601	QSW-B0006CEZZ	J	Horiz. Position
SW1801	QSW-S0014TAZZ	J	Cut Off
MISCELLANEOUS PART			
J201	QSōCJ0108CEZZ	J	Socket

PWB-B DUNTK4450DE01 CRT SOCKET UNIT

Ref. No.	Part No.	*	Description
TRANSISTORS			
Q850, 851, 852	VS2SC2068LB1E	J	2SC2068
COILS			
L852, 853, 854	VP-LK470K0000	J	47μH
CONTROLS			
R850, 851, 852	RVR-B5017CEZZ	J	3k(B) Red Bias Green Bias Blue Bias
R862, 864	RVR-B5028CEZZ	J	300(B) Red Drive Blue Drive

Ref. No.	Part No.	*	Description
CAPACITORS			
⚠ C853	VCEAAH2EW476M	J	47 250V Electrolytic
C880, 881	RC-KZ005JCEZZ	J	0.01 1.4kV Ceramic
RESISTORS			
⚠ R865, ⚠ 866, ⚠ 867	VRS-VV3LB822J	J	8.2k 3W Oxide Film
MISCELLANEOUS PARTS			
S851	QSöCV1425CEZZ	J	Socket for CRT
SG850 | 854	QSPGC0012CEZZ	J	Spark Gap
SG856	QSPGH0012CEZZ	J	Spark Gap
SG855	QSPGC0014CEZZ	J	Spark Gap
SG857	QSPGH0005CEZZ	J	Spark Gap

PWB-C DUNTK4654DE00 SENSOR UNIT

Ref. No.	Part No.	*	Description
TUNER			
NOTE: THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.			
⚠	VTUVTY-1U110/	J	140 Channel Varactor Tuner
INTEGRATED CIRCUITS			
IC1102	RH-iX0260CEZZ	J	
IC1301	VHi HD14042P-1	J	
IC1401, 1402	RH-iX0564CEZZ	J	
IC1403	VHi SN74LS32-1	J	
IC1501 | 1505	VHi UPD4066B-1	J	
IC1601	RH-iX0579CEZZ	J	
IC1701	VHi TC4013BP-1	J	
TRANSISTORS			
Q1101, 1203	VS2SC1890AE-1	J	2SC1890A(E)
Q1102	VS2SK30AG//1E	J	2SK30A(GR)
Q1201, 1204, 1205, 1304, 1401, 1402, 1803, 1804	VS2SC1815YW-1	J	2SC1815(Y)
Q1202, 1805	VS2SA1015Y/1E	J	2SA1015(Y)
Q1301, 1303, 1802, 1806	VS2SC1815GW-1	J	2SC1815(GR)
Q1302, 1305, 1306, 1501, 1601, 1702, 1801	VS2SA1015G/1E	J	2SA1015(GR)
Q1403	VS2SC454-C/1E	J	2SC454(C)
1404, 1405, 1406			
Q1701	VS2SC1983//-2	J	2SC1983
DIODES			
D1101	RH-EX0131CEZZ	J	Zener Diode RD5.1E
D1102, 1103, 1104, 1202, 1203, 1204, 1302, 1303, 1401, 1402, 1501, 1502, 1503 | 1508, 1510 | 1518, 1521 | 1539, 1601, 1602, 1603, 1605, 1606, 1702, 1705, 1706, 1708, 1711, 1714, 1716, 1801, 1805	VHD1SS119//-1	J	1SS119
D1105	RH-EX0038CEZZ	J	Zener Diode RD12F
D1106	RH-EX0219CEZZ	J	Zener Diode RD33EB4
D1201, 1703	RH-EX0047CEZZ or RH-EX0200CEZZ	J	Zener Diode RD12E
D1205	RH-EX0102CEZZ	J	Zener Diode
D1301	RH-EX0089CEZZ	J	Zener Diode
D1701	RH-DX0200CEZZ or RH-DX0208CEZZ	J	1D4B42 1B4B42

Ref. No.	Part No.	*	Description
D1704, 1712, 1713	RH-EX0088CEZZ	J	Zener Diode RD7.5EB1
D1709	RH-EX0103CEZZ	J	Zener Diode
D1710	RH-DX0101CEZZ	J	RF1
D1715	RH-EX0048CEZZ	J	Zener Diode
PACKAGED CIRCUIT			
X1601	RCRSB0013CEZZ	J	Crystal Osc. 4.5MHz
COILS			
L1401, 1701 | 1704	VP-MK101K0000	J	100μH
L1402	RCiLB0018CEZZ	J	Sign Adjust
L1403 | 1406	VP-DF150K0000	J	15μH
CONTROLS			
R1206	RVR-B4460CEZZ or RVR-B5137CEZZ	J	5k(B) S.D. Adj
R1812	RVR-M7198TAZZ	J	5k(B) Initial Volume
CAPACITORS			
C1115	VCEAAA1CW477M	J	470 16V Electrolytic
C1604, 1801	VCSATA1VE335K	J	3.3 35V Tantalum
C1705	RC-EZ0019CEZZ	J	1000 35V Electrolytic
C1707	VCEAAA1CW108M	J	1000 16V Electrolytic
C1708	RC-EZ0049GEZZ	J	0.47 5.5V Electrolytic
C1709	VCEAAA0JW108M	J	1000 6.3V Electrolytic
RESISTORS			
⚠ R1108	VRS-VV3DB153J	J	15k 2W Oxide Film
R1109	VRS-VV3AB101J	J	100 1W Oxide Film
⚠ R1110	VRS-VV3AB390J	J	39 1W Oxide Film
R1703	VRS-VV3AB680J	J	68 1W Oxide Film
R1706	VRS-VV3DB470J	J	47 2W Oxide Film
RR1601, 1602	RMPTC0036CEZZ	J	10k x 5pcs Resistors
RR1603, 1604	RMPTC0066CEZZ	J	100k x 6pcs Resistors
RR1605	RMPTC0067CEZZ	J	100k x 3pcs Resistors
SWITCH			
SW1601	QSW-S0059GEZZ	J	Clock Test
MISCELLANEOUS PARTS			
J1601, 1602	QSöCJ0108CEZZ	J	Socket PSC in Frequency Out
FB1401 | 1408, 1601	RBLN-0036CEZZ	J	Ferrit Bead

Ref. No.	Part No.	*	Description
PWB-D DUNTK4655DE00 POWER UNIT			
INTEGRATED CIRCUITS			
▲⚠ IC701	RH-iZ0044CEZZ	J	
⚠ IC702	VHiSTR30110-1	J	
TRANSISTORS			
⚠ Q501, 502	VS2SC1827//2E	J	2SC1827
⚠ Q503	VS2SB861///-1	J	2SB861
Q531	VS2SC2482//-1	J	2SC2482
Q551	VS2SC1826//1E	J	2SC1826
Q601, 604	VS2SC2655Y/-1	J	2SC2655(Y)
⚠ Q602	VS2SD871///-1	J	2SD871
Q605	VS2SC1815YW-1	J	2SC1815(Y)
Q681	VS2SC1815GW-1	J	2SC1815(GR)
⚠ Q735	VS2SD1426//1E	J	2SD1426
Q751	VS2SA1348//-1	J	2SA1348
DIODES			
D438	RH-EX0048CEZZ	J	Zener Diode
⚠ D517, ⚠ 551, ⚠ 621, ⚠ 622	RH-DX0086TAZZ	J	RH-1S
⚠ D519	RH-DX0105TAZZ	J	
D530, 531, ⚠ 532, ⚠ 740 | ⚠ 743	RH-DX0110CEZZ	J	
D552,	VHD1SS119//-1	J	1SS119
▲⚠ 682, ⚠ 708			
⚠ D614	RH-DX0197CEZZ	J	
D619, ⚠ 620, ⚠ 710	RH-DX0101CEZZ	J	RF1
⚠ D635	RH-DX0229CEZZ	J	
▲⚠ D681	RH-DX0126CEZZ	J	
▲⚠ D701	VHDS6321FLB1E	J	Silicon Controled Rectifier
⚠ D702 | ⚠ 705	RH-DX0154CEZZ	J	1S1887A
⚠ D707	RH-EX0086CEZZ	J	Zener Diode
D711	RH-EX0219CEZZ	J	Zener Diode
⚠ D756	RH-EX0047CEZZ	J	Zener Diode RD12E
D757	RH-EX0065CEZZ	J	Zener Diode RD16E
PACKAGED CIRCUITS			
⚠ PR701	RMPTP0041CEZZ	J	Positive Coefficient Thermister
⚠ PR702	RMPTP0025CEZZ	J	Positive Coefficient Thermister
TH501	RH-HZ0005CEZZ	J	Thermister
COILS			
L551	VP-CF220K0000	J	22μH
L552	VP-MK100K0000	J	10μH

Ref. No.	Part No.	*	Description		
L634	RCi LZ0463CEZZ	J	Horizontal Linearity		
L635	RCi LZ0525CEZZ	J	Horizontal Linearity		
⚠ L701	RCi LF0107CEZZ	J	Line Filter		
TRANSFORMERS					
T551	RTRNQ0057CEZZ	J	Side Pin		
T601, 602	RTRNZ0186CEZZ	J	Power Drive Horizontal Drive		
▲⚠ T603	RTRNF1593CEZZ	J	Horizontal Output		
T701	RTRNC0034CEZZ	J	Choke		
⚠ T752	RTRNZ0229CEZZ	J	Pulse		
CAPACITORS					
⚠ C519, ⚠ 736	VCEAAH2CW107M	J	100	160V	Electrolytic
C520	VCEAAH2AW227M	J	220	100V	Electrolytic
C522	VCQPSC2GA223K	J	0.022	400V	Polypro Film
⚠ C532	RC-EZ0125CEZZ	J	33	160V	Electrolytic
C534, 535	VCEAAA1JW477M	J	470	63V	Electrolytic
⚠ C551	VCEAAA1VW477M	J	470	35V	Electrolytic
⚠ C552	VCEAAA1VW477M	J	470	35V	Electrolytic
C561, 620, 629, 713	VCKYPA2HB102K	J	0.001	500V	Ceramic
C617	VCKYPA2HB101K	J	100p	500V	Ceramic
⚠ C618	VCEAAA1EW477M	J	470	25V	Electrolytic
C621	VCEAAA1EW107M	J	100	25V	Electrolytic
⚠ C622	VCEAAH2EW336M	J	33	250V	Electrolytic
C624, 681, 703, 704, 705, 743, 744, 745	VCKYPB2HE103P	J	0.01	500V	Ceramic
C625	VCEAAA2CW106M	J	10	160V	Electrolytic
⚠ C630	VCEAAA1HW337M	J	330	50V	Electrolytic
C633	VCFPPD2DB564J	J	0.56	200V	Metalized Polypro
▲⚠ C635	VCKYPU3FB151K	J	150p	3.15kV	Ceramic
▲⚠ C636, ▲⚠ 637, ▲⚠ 638	VCFPPD3CA362J	J	0.0036	1.6kV	Metalized Polypro
▲⚠ C639	VCFPPD3CA392J	J	0.039	1.6kV	Metalized Polypro
⚠ C701	RC-QZ012DCEZZ	J	0.1	AC125V	Polypro Film
⚠ C702, ⚠ C706	RC-EZ0118CEZZ	J	330	160V	Electrolytic
⚠ C708	RC-EZ0082CEZZ	J	470	200V	Electrolytic
C709	VCQPPB2JB103J	J	0.01	630V	Polypro Film
C710	VCKYPA2HB472K	J	0.0047	500V	Ceramic
⚠ C711	RC-EZ0071CEZZ	J	470	160V	Electrolytic
C714	VCEAAA1VW107M	J	100	35V	Electrolytic
⚠ C735	VCEAAA2CW226M	J	22	160V	Electrolytic
C739	VCKYPU3FB151K	J	150p	3.15kV	Ceramic
C741, 742	VCFPPD3CA472J	J	0.0047	1.6kV	Metalized Polypro
⚠ C746	RC-EZ0141CEZZ	J	680	200V	Metalized Polypro

Ref. No.	Part No.	*	Description		
RESISTORS					
⚠ R423	VRS-SV2HC103J	J	10k	1/2W	Oxide Film
⚠ R516, ⚠ 518, ⚠ 562	VRS-SV2HC1R0J	J	1	1/2W	Oxide Film
⚠ R517	VRN-VV3DB8R2J	J	8.2	2W	Metal Coating
⚠ R520	VRN-VV3AB2R2J	J	2.2	1W	Metal Coating
⚠ R521	VRS-VV3LB392J	J	3.9k	3W	Oxide Film
⚠ R526	VRS-VV3AB222J	J	2.2k	1W	Oxide Film
⚠ R533	VRN-VV3AB5R6J	J	5.6	1W	Metal Coating
⚠ R534	VRS-VV3AB221J	J	220	1W	Oxide Film
⚠ R535	VRS-VV3DB271J	J	270	2W	Oxide Film
R541	VRW-KX3HC101K	J	100	5W	Cement
R557, 558	VRS-VV3DB331J	J	330	2W	Oxide Film
⚠ R561	VRS-VV3LB821J	J	820	3W	Oxide Film
⚠ R617	VRW-KY3HC470K	J	47	5W	Cement
⚠ R619	VRN-VV3DB2R0J	J	2	2W	Oxide Film
⚠ R620, ⚠ 621	VRS-SV2HC100J	J	10	1/2W	Oxide Film
⚠ R622	VRS-SV2HC101J	J	100	1/2W	Oxide Film
⚠ R631	VRW-KP41C3R3K	J	3.3	15W	Cement
⚠ R634	VRN-VV3DBR47J	J	0.47	2W	Metal Coating
⚠ R636	VRW-KP3LC100K	J	10	3W	Cement
R637	VRS-VV3DB561J	J	560	2W	Oxide Film
⚠ R654	VRW-KP3HC180K	J	18	5W	Cement
▲⚠ R681	VRD-RA2BE473J	J	47k	1/8W	Carbon
▲⚠ R682	VRD-RA2BE683J	J	68k	1/8W	Carbon
⚠ R702	VRW-KX4AC1R0K	J	1	10W	Cement
⚠ R707	VRS-SV2HC151J	J	150	1/2W	Oxide Film
⚠ R708	VRS-VV3LB331J	J	330	3W	Oxide Film
⚠ R715	VRN-VV3AB1R0J	J	1	1W	Metal Coating
⚠ R716	VRS-SV2HC101J	J	100	1/2W	Oxide Film
⚠ R719	VRC-UA2HG105K	J	1M	1/2W	Solid
⚠ R735	VRW-KP3HC5R6K	J	5.6	5W	Cement
R738	VRN-VV3AB1R8J	J	1.8	1W	Oxide Film
⚠ R739	VRW-KY41C391K	J	390	15W	Cement
⚠ R740	VRW-KP3HC1R8K	J	1.8	5W	Cement
RELAY					
⚠ RY701	RRLYU0018CEZZ	J	Power Relay		
SWITCH					
S501	QSW-B0006CEZZ	J	Vertical Position		
MISCELLANEOUS PARTS					
⚠ F701	QFS-B5022GEZZ	J	Fuse—5A 125V AC		
	QFSHD1002CEZZ	J	Holder, F701 (2 Used)		

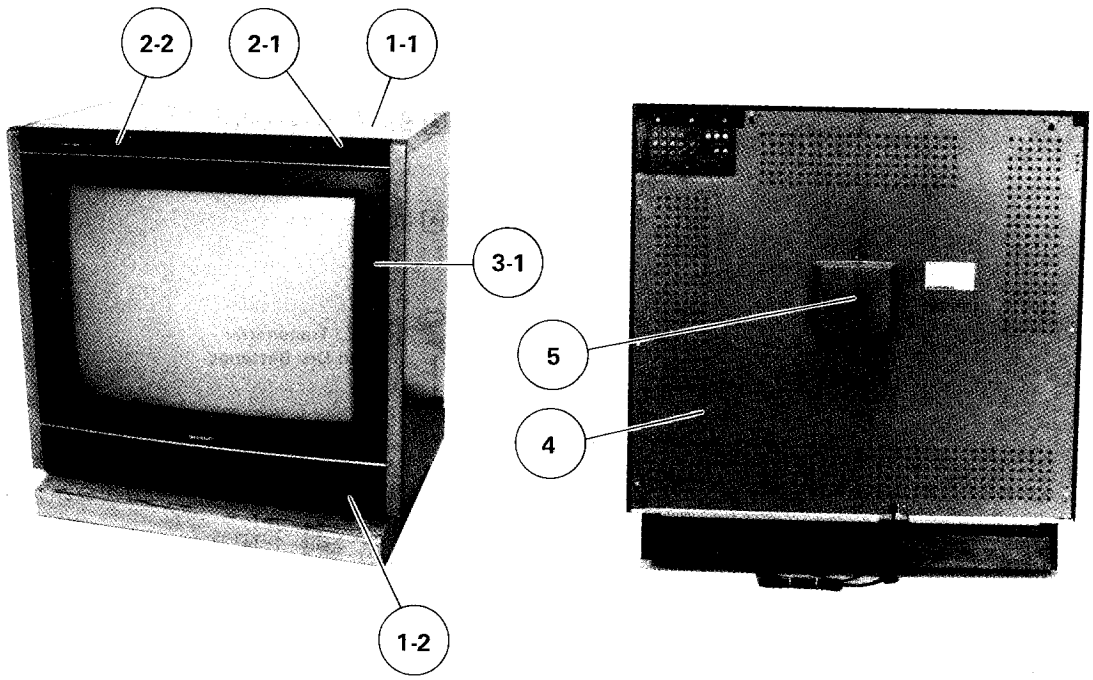
Ref. No.	Part No.	*	Description
PWB-E DUNTK4656DE00 MS UNIT			
ASSEMBLY UNIT			
⚠	RUNTK0127CEZZ	J	MS Power Unit
INTEGRATED CIRCUITS			
IC3001	RH-iX0633CEZZ	J	
IC3101	RHiUPC1391H-1	J	
IC3301	VHiAN6291//-1	J	
IC3302	VHiTA75558S-1	J	
IC3402	VHiM5218L//-1	J	
IC3601	RH-iX0214CEZZ	J	
⚠ IC3801	VHiSTK4362/-1	J	
TRANSISTORS			
Q3001, 3002, 3007, 3052, 3056, 3060, 3101, 3301, 3302, 3401, 3402	VS2SC1815YW-1	J	2SC1815(Y)
Q3005, 3006, 3008, 3051, 3053, 3054	VS2SA1015Y/1E	J	2SA1015(Y)
Q3055	VS2SC1815GW-1	J	2SC1815(GR)
Q3701	VS2SC1983//-2	J	2SC1983
DIODES			
D3001, 3002, 3004	RH-EX0020GEZZ	J	Zener Diode RD5.1EB3
D3003	RH-EX0089CEZZ	J	Zener Diode
D3051, 3052, 3601	VHD1SS119//-1	J	1SS119
D3101	RH-EX0061CEZZ	J	Zener Diode
D3301	RH-EX0048CEZZ	J	Zener Diode RD6.2E
D3701, 3714	RH-EX0047CEZZ	J	Zener Diode RD12E
⚠ D3710 | ⚠ 3713	RH-DX0038CEZZ	J	
COILS			
L3001	RCiLF0097CEZZ	J	Low Pass Filter
L3002, 3005	RCiLF0099CEZZ	J	Low Pass Filter
L3003	RCiLV0142CEZZ	J	Band Pass Filter
L3004	RCiLF0004GEZZ	J	Low Pass Filter
L3006	RCiLZ0440CEZZ	J	Delay Line Coil
L3101	VP-MK220K0000	J	22μH
L3102	RCiLD0018GEZZ	J	Detector
L3103	RCiLD0019GEZZ	J	Detector
CERAMIC FILTER			
CF3101	RFiLC0001CEZZ	J	Sound Take—Off

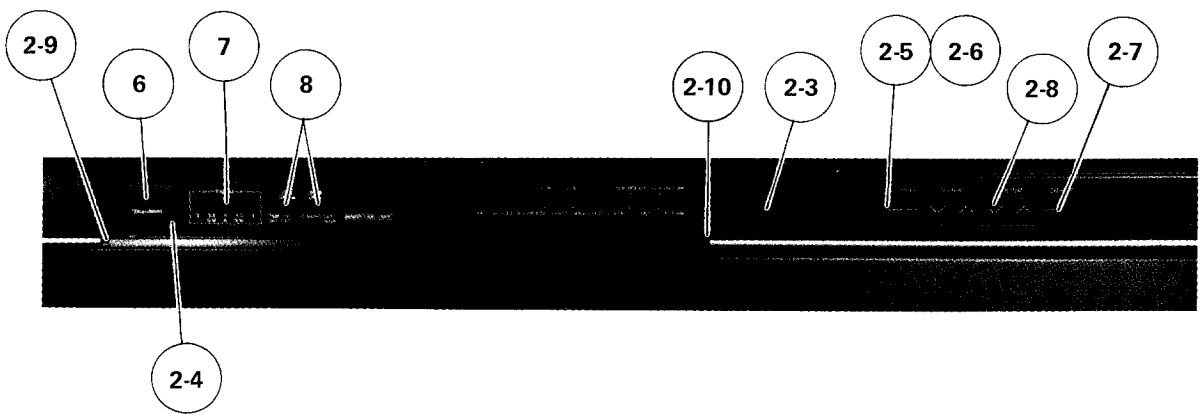
Ref. No.	Part No.	*	Description		
CONTROLS					
R3012, 3036	RVR-B5138CEZZ	J	10k(B)		SEP Adj. VCO Adj.
R3080, 3081	RVR-B5137CEZZ	J	5k(B)		SAP Adj. L—R Adj.
R3105	RVR-B4004CEZZ or RVR-B5138CEZZ	J	10k(B)		Audio Level Adj.
R3313	RVR-B5139CEZZ	J	20k(B)		High Band Trim
R3325	RVR-B5135CEZZ	J	2k(B)		Timing Trim
CAPACITORS					
C3005, 3606	VCEAAA1CW108M	J	1000	16V	Electrolytic
C3111, 3321	VCEAAA1CW107M	J	100	16V	Electrolytic
C3302, 3310	VCE9AA1HW335M	J	3.3	50V	Electrolytic (N.P.)
C3309, 3325	VCSATA1AE476M	J	47	10V	Tantalum
C3312	VCSATA1VE335K	J	3.3	35V	Tantalum
C3323	VCSATA1VE106K	J	10	35V	Electrolytic
C3331	VCEAAA1AW477M	J	470	10V	Electrolytic
C3607, 3703, 3714,	VCEAAA1CW477M	J	470	16V	Electrolytic
⚠ C3701	VCEAAH1VW338M	J	3300	35V	Electrolytic
C3702	VCEAAA1CW227M	J	220	16V	Electrolytic
C3710, 3711, 3712	VCKYPB2HE103P	J	0.01	500V	Ceramic
⚠ C3713	RC-EZ0118CEZZ	J	330	160V	Electrolytic
C3801, 3817	VCE9AA1HW474M	J	0.47	50V	Electrolytic (N.P.)
C3803, 3813	VCEAAA1VW227M	J	220	35V	Electrolytic
C3807, 3811	VCEAAA1VW108M	J	1000	35V	Electrolytic
C3808	VCEAAA1HW107M	J	100	50V	Electrolytic
RESISTORS					
R3332	VRS-VV3AB221J	J	220	1W	Oxide Film
⚠ R3701	VRS-VV3LB680J	J	68	3W	Oxide Film
⚠ R3703	VRS-VV3AB151J	J	150	1W	Oxide Film
⚠ R3705	VRN-VV3AB5R6J	J	5.6	1W	Metal Coating
⚠ R3710	VRS-VV3AB333J	J	33k	1W	Oxide Film
⚠ R3711	VRW-KP3HC1R8K	J	1.8	5W	Cement
⚠ R3807	VRS-VV3AB101J	J	100	1W	Oxide Film
MISCELLANEOUS PARTS					
⚠ F3701	QFS-B2521GEZZ	J	Fuse—2.5A 125AC		
	QFSHD1002CEZZ	J	Holder, F3701 (2 Used)		

Ref. No.	Part No.	*	Description
PWB-F DUNTK4657DE00 LED UNIT			
DIODES			
D4301	RH-PX0095CEZZ	J	LED, B.C. (Stereo/Secondary Audio Program)
D4302	RH-PX0022CEZZ	J	LED, Secondary Audio Program
D4303, 4304	RH-PX0012CEZZ	J	LED, Monoral LED, Power
D4305	RH-EX0089CEZZ	J	Zener Diode
SWITCHES			
SW4301, 4302, 4303, 4304, 4305	QSW-K0025CEZZ	J	TV/Video Channel—Down Channel—Up Volume—Down Volume—Up
PWB-G DUNTK4658DE00 CONTROL UNIT			
CONTROLS			
R4101, 4102, 4108	RVR-B4695CEZZ	J	10k(B) Tone Balance Brightness
R4103	RVR-B4619CEZZ	J	100k(B) Vertical Linearity
R4104	RVR-B4609CEZZ	J	300(B) Vertical Size
R4105	RVR-B4764CEZZ	J	200k(B) Vertical Hold
R4106, 4109, 4112	RVR-B4686CEZZ	J	10k(B) Sharpness Color Picture
R4107	RVR-B4615CEZZ	J	10k(B) Sub Brightness
R4110	RVR-B4686CEZZ	J	10k(B) Tint
R4111	RVR-B4618CEZZ	J	50k(B) Sub Picture
PWB-I DUNTK4659DE00 POWER SWITCH UNIT			
SWITCH			
SW4401	QSW-P0443CEZZ	J	Power
PWB-K DUNTK4660DE00 SWITCH UNIT			
DIODES			
D4201	RH-PX0012CEZZ	J	LED, Memory
SWITCHES			
SW4201, 4202, 4204, 4205, 4206, 4207	QSW-K0014CEZZ	J	Timer Set VI Memory ADD Erase Secondary Audio Program
SW4203	QSW-P0264CEZZ	J	TV/CATV
SW4208	QSW-P0264CEZZ	J	Monoral/Stereo
S2001	QSW-P0424CEZZ	J	South/South(Mid)/Off (East/West)/North(Mid)/North
PWB-L DUNTK3650DE14 FINE UNIT			
TRANSISTORS			
Q1501, 1502, 1503, 1508	VS2SC1815YW-1	J	2SC1815(Y)
Q1504	VS2SC1906//1E	J	2SC1906
Q1509	VS2SA1015Y/1E	J	2SA1015(Y)
⚠Q1510	VS2SA968Y//-1	J	2SA968(Y)
⚠Q1511	VS2SC2238Y//-1	J	2SC2238(Y)
DIODES			
D1501, D1502, 1505	RH-EX0047CEZZ VHD1SS119//-1	J J	Zener Diode 1SS119
D1503, 1504, 1508,	VHD1SS81///-1	J	1SS81
D1506, 1507	RH-DX0086TAZZ	J	RH-1S
COIL			
L1501	VP-MK390K0000	J	39μH
DELAY LINE			
DL1501	RCiLZ0431CEZZ	J	Delay Line
CAPACITORS			
C1516, ⚠1522	VCEAAA2CW106M	J	10 160V Electrolytic
C1517, 1518	VCQYSH2DM472K	J	0.0047 200V Mylar
⚠C1521, 1526	VCEAAA1CW107M	J	100 16V Electrolytic
C1525	VCCSPA2HL560K	J	56p 500V Ceramic
RESISTORS			
⚠R1530	VRS-VV3AB471J	J	470 1W Oxide Film
⚠R1541	VRS-VV3DB221J	J	220 2W Oxide Film
MISCELLANEOUS PART			
FB1501	RBLN-0027CEZZ	J	Ferrit Bead

Ref. No.	Part No.	*	Description
RUNTK0127CEZZ MS POWER UNIT			
TRANSISTORS			
⚠ Q3751	96E2SC2827	J	2SC2827
	or		
	96E2SC3158	J	2SC3158
Q3752, 3753, 3754, 3755	96E2SC945	J	2SC945
Q3756	96E2SC2003	J	2SC2003
	or		
	96E2SC3243	J	2SC3243
DIODES			
D3751	96E1S953	J	1S953
⚠ D3753	96ESM-3-02FR	J	SM−3−02FR
D3754	96ERD10E	J	RD10EB2
TRANSISTORS			
⚠ T3751	RTRNZ0261CEZZ	J	Drive
⚠ T3752	RTRNZ0260CEZZ	J	Converter
CONTROL			
R3758	96EVSF807M102	J	1k(B) 26.5V Adj.
CAPACITORS			
C3751	96E5B2H222KYA	J	0.0022 500V Ceramic
C3752, 3753, 3754, 3757	96EUMS103K	J	0.01 100V Mylar
C3756	96EUPC1H102MR	J	1000 50V Electrolytic
RESISTORS			
⚠ R3751, ⚠ 3752	96ESQ7AH331	J	330 7W Cement
R3769	96ERSF1BJ820	J	82 1W Oxide Film
R3770	96ERSF1BJ561	J	560 1W Oxide Film
TRANSFORMERS			
⚠ T702	RTRNP0385CEZZ	J	Power Transformer
⚠ T751	RTRNP0386CEZZ	J	Power Transformer
MISCELLANEOUS PARTS			
⚠	QACCD3010CESA	J	AC Line Cord
	QTANZ0583CEZZ	J	Antenna Terminal Board Ass'y
	RRMCG0402CESA	J	Remote Control Transmitter (Complete Ass'y)
	VSP0010PBD68A	J	Speaker, 8 ohm (L)(R)
	RRMCU0149CEZZ	J	Remote Control Reciever
	RUNTK0076CEZZ	J	Antenna Adapter
⚠ S702	QSW-P0436CEZZ	J	ADG Switch
RRMCG0412CESA REMOTE CONTROL TRANSMITTER			
	GCABA0073AASB	J	Cabinet, Top
	HPNLH0319PASA	J	Indication Plate
	GCABB0074AASB	J	Cabinet Bottom
	GCöVH0052PASB	J	Battery Cover
	PFiLW0098PASA	J	Cover-Osc. Filter
	MSPRP0234PAZZ	J	Rubber Key
	QTANZ0152PAZZ	J	Battery Terminal (−)
	QTANZ0151PAZZ	J	Battery Terminal (+)
	QTANZ0096PAZZ	J	Battery Terminal (+, −)
	JBTN-0726PASA	J	Button, 1 pcs Used
	JBTN-0727PASA	J	Button, 2 pcs Used
	JBTN-0728PASA	J	Button, 5 pcs Used
	JBTN-0729PASA	J	Button, 4 pcs Used
	JBTN-0730PASA	J	Button, 1 pcs Used
	JBTN-0731PASA	J	Button, 12 pcs Used
IC3001	RH-iX0360PAZZ	J	IC (UPD1943G)
Q3001	VS2SC2120Y/-A	J	2SA2120Y
D3001	RH-PX0109PAZZ	J	LED (SE1003)
D3002, 3003	VHD1S1555//1A	J	1S1555
CF3001	RFiLF0010PAZZ	J	Ceramic Osc. (KBR455BTL)

Ref. No.	Part No.	*	Description
CABINET PARTS			
1	CCAB-5430CE01	J	Cabinet Ass'y, Front
1-1	Not Available		Cabinet Front
1-2	GNETC0046CESA	J	Net, Speaker
2	CPNLC3018CE01	J	Panel Ass'y, Front
2-1	Not Available		Panel, Front
2-2	GDŌRF3013CESA	J	Door
2-3	Hi NDP2439CEKA	J	Indication Plate
2-4	Hi NDP2440CEKA	J	Indication Plate in Door
2-5	HPNLC1565CEKA	J	Panel, Sub
2-6	HPNLC1575CEKA	J	Panel, Sub
2-7	JBTN-1386CEKA	J	Button, Power
2-8	JBTN-1387CEKA	J	Button, Volume/Channel/ TV/Video
2-9	LHLDZ1438CESA	J	Door Arm—A
2-10	LHLDZ1439CESA	J	Door Arm—B
3	GWAKP1277CE02	J	Mask Ass'y
3-1	Not Available		Mask
3-2	HBDGB0021TASA	J	Badge "SHARP"
4	GFTAR5504CEKZ	J	Cover, Rear
5	GCŌVH1037CEKB	J	Cover, CRT
6	JBTN-1119CE00	J	Button, ADG
7	JBTN-1141CESA	J	Button, Facing
8	JBTN-1310CEK0	J	Button, TV—CATV/Monoral On—Off

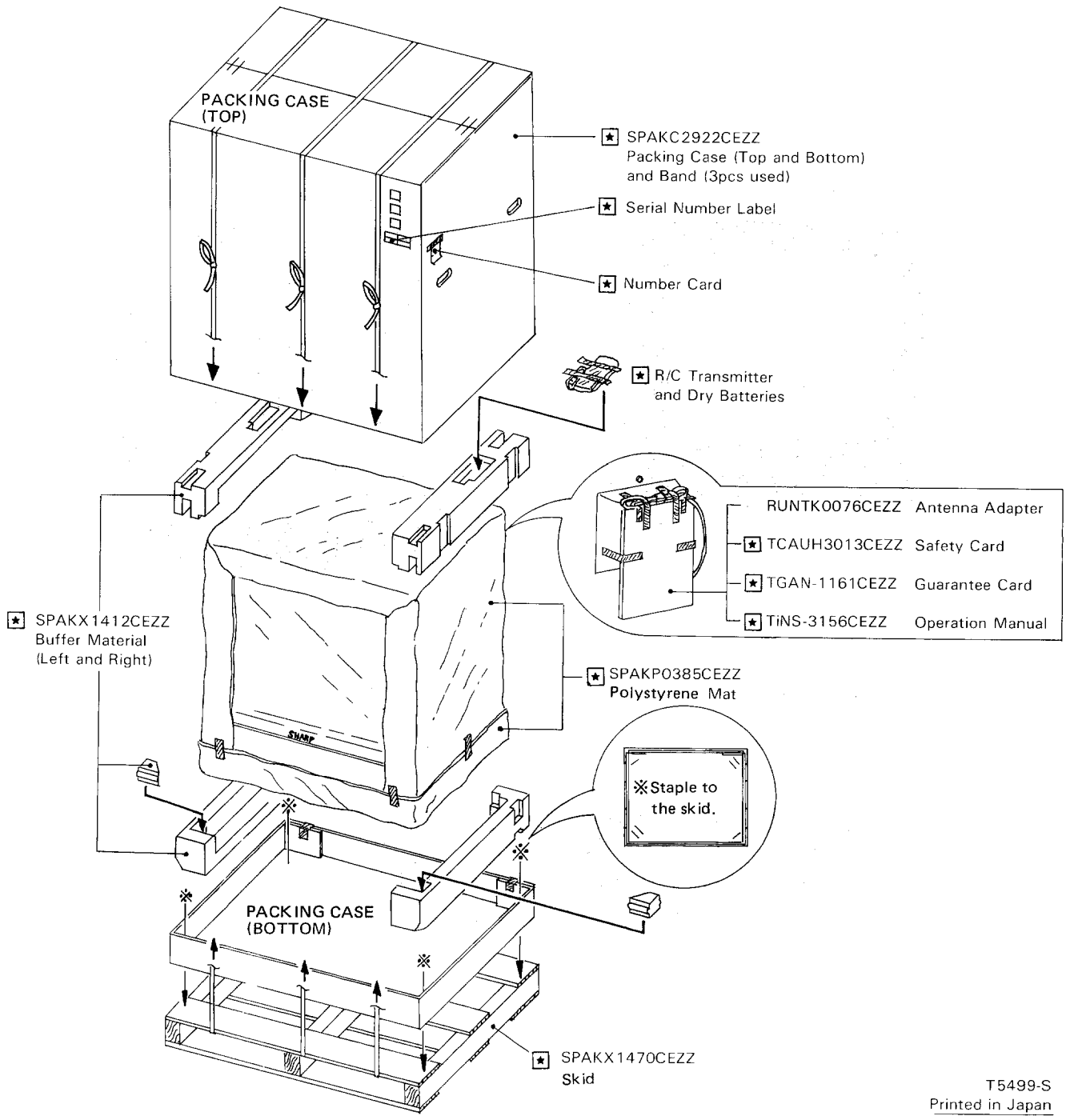




PACKING OF THE SET

■ **Setting positions of the knobs**

MONO witch	OFF (STEREO)	BRIGHTNESS	Center Click
SAP/MAIN swtich	MAIN	COLOR	5/10
TV/VIDEO switch	TV	TINT	Fresh Tone
TV/CATV switch	TV	PICTURE	10/10
AFT switch	ON	SHARPNESS	5/10
AGING switch	OFF	BALANCE	Center Click
VI MEMORY switch	3CH	S-Tone	Center Click
VI switch	OFF	V-Hold	Best Position
TIME SET switch	OFF	Speaker Switch	INT.
MONO/STEREO switch	STEREO	FACING Switch	E-W Position



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